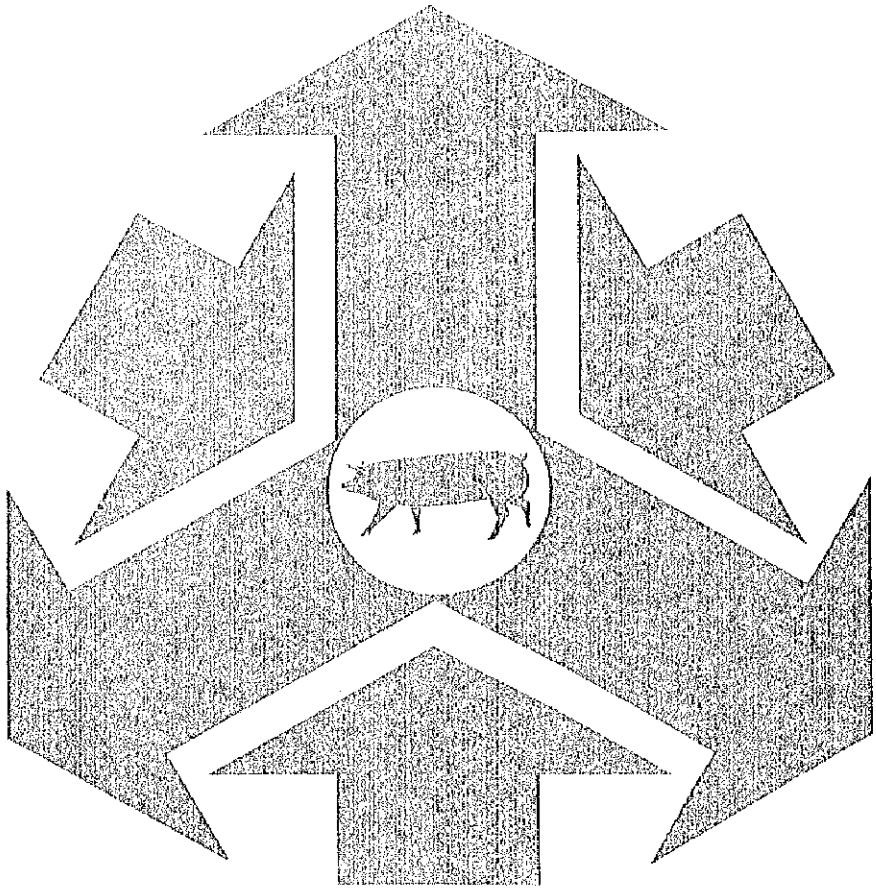
Cooperative Strategies for the Pork Industry



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Preface

Significant changes are taking place in the swine industry. Many, such as large-scale corporate farming and contracting, threaten the very existence of the family farm. Therefore, the authors sought appropriate cooperative activities that could keep the family farm competitive with other production systems, and thereby encourage survival of the family farm.

The economic situation surrounding the swine industry was found largely in published data. Most of the analysis of this data was done in terms of 1974. Even though more up-to-date information was available, 1974 was a more typical year in the hog cycle than 1975 or 1976. The pig crop in 1975, for example, was the smallest in almost 40 years.

Alternative cooperative activities and strategies were developed through personal contacts with farm supply and livestock marketing and processing cooperatives, family farms, large corporate farms, equipment and building suppliers, and others connected with the industry.

A number of cooperatives offering their producers innovative production, marketing and processing programs are named in this report. They are named as examples only and no attempt was made to prepare a complete list of cooperatives offering such programs.

Contents

Highlights

Major changes are occurring in the system that produces, processes, and distributes pork products. These changes are the result of many technological, institutional, social, and economic forces. The number of farms selling hogs and pigs has declined from 2.1 million in 1950 to 0.6 million in 1969. The average number of hogs sold per farm has increased to keep total production fairly constant.

Most production has moved from pasture to confinement facilities. Greater confinement means substitution of capital for labor, creating an increasing demand for credit. Accompanying the shift to confinement is increased production efficiency and noticeably less seasonal production. However, the characteristic hog cycle, still exists. The persistent cycle, together with larger capital outlays, results in greater financial risk and the need to reduce it.

Farms are becoming more specialized. Some primarily farrow feeder pigs; others primarily finish pigs. Many small groups of 10 to 40 producers have formed farrowing cooperatives and other corporations to produce their pigs jointly in off-farm facilities. The trend toward specialization is expected to continue at a moderate pace, and some large corporate farms will come into production in the next 10 to 15 years. However, the family farm that farrows and finishes is expected to be the predominant source of market hogs.

Cooperatives could have a key role in the survival and well-being of family farms. Of course, these farms are going to be larger than in the past. They will sell 1,500 or more head per year, and many will be organized as family partnerships and family corporations.

The Corn Belt is expected to continue as the center of hog production and processing. The 12-State area currently markets 80 percent of hogs and slaughters 65 percent. Other areas such as the Southeast will increase their production if corn production continues to increase in those areas.

Hog processing plants have been relocated from central cities to areas of production in order to reduce transportation and labor costs as well as avoid many problems of operating plants in densely populated areas. At the same time, many new firms have entered. Concentration of purchases on a national basis by the four leading firms has been reduced from 44 percent in 1920 to 32 percent. However, there has actually been an increase in concentration of purchases in local markets where producers sell. Instead of sending hogs to terminal markets where there are several buyers, most producers prefer to sell their hogs to a few local buyers because it is more convenient and less costly. Local buyer concentration is expected to increase in the future.

Current trends in marketing raise questions about the adequacy of competition for hogs to generate prices that accurately reflect supply and demand, and reflect appropriate differentials among hogs on the basis of quality and value in the retail trade.

Future cooperative activities must be geared to a swine industry where family farms are each producing 1,500 to 15,000 hogs per year in confinement facilities and selling to a limited number of packers. Three types of services could be offered by cooperatives: (1) Production services, (2) marketing services, (3) integrated services.

Production services would be aimed at making more effective production decisions on the farm and achieving efficient production. Increasing complexity of production technology used in large scale, modern operations raises the need for management assistance. Credit is needed to finance the operations, and repayment has to be geared to livestock production. Farm supplies are needed for crop and livestock production. Quality breeding stock and swine testing are needed to produce quality pork efficiently. Specialized far-

rowing, nursery, and finishing facilities need to be carefully planned, built, equipped, and operated. As a number of producers establish off-farm farrowing corporations, a service cooperative could be used to build facilities, train managers, provide breeding stock, and provide continuing management assistance.

Marketing services could seek to improve the market position of producers by handling a sufficient volume of hogs to countervail the market power of processors, and to improve the efficiency of marketing slaughter hogs. With a large investment in farm facilities, many producers will be seeking to reduce their price risk either through forward contracts or by hedging in the futures market. Packers may also seek contracts to stabilize the flow of hogs to their facilities and reduce their costs. In either case, producers could use a cooperative to assist them in making fair contracts quickly and easily. Some producers may desire a cooperative pooling arrangement to provide them with a more stable average price over time.

A teleauction or teletype auction is a marketing service that could be used by a cooperative to increase the number of potential bidders on each producer's hogs and to improve the efficiency of moving hogs from farm to packer. Finally, a cooperative could engage in slaughtering and processing. This could be done on a custom basis with an existing packer, in partnership with a packer, by leasing an established plant, by buying such a plant, or by building a new plant.

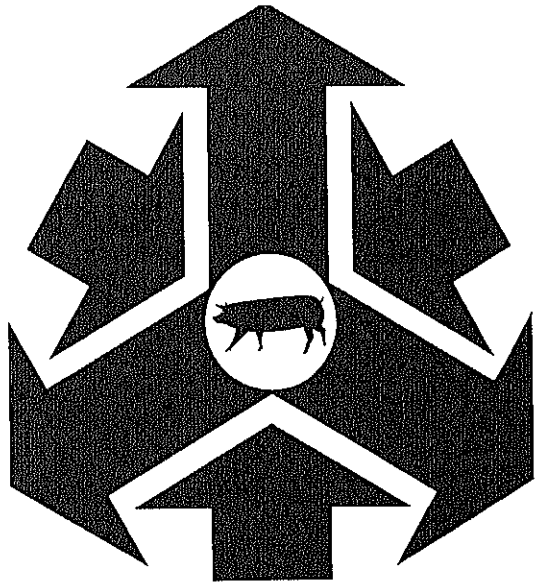
Integrated services would require producers to transfer some traditional decisionmaking functions to their cooperative in order to improve the coordination of hog production, processing, and distribution. Such a transfer would enhance the ability of the cooperative to merchandise its product and make greater returns to producers. Depending on the desires of producers, the cooperative could coordinate the entire process and merchandise pork products to retailers, or it could be less extensive in operation and merchandise slaughter hogs or feeder pigs.

A feeder pig merchandising cooperative would seek to produce large lots of uniform, high-quality pigs by establishing requirements for breeding stock, facilities, nutrition, and general practices. The pigs would be sold on the reputation of the cooperative by private negotiation or teleauction. A slaughter hog merchandising cooperative would go beyond pig production to manage pig finishing. The members would give the cooperative the prerogative of directing the size, quality, and timing of hog production to meet the needs of packers and maximize profits of producers. The cooperative could sell by teleauction or it could negotiate a contract with a packer to deliver a fixed number of hogs of a given size and quality each working day. Contracts between the cooperative and its members would ensure the cooperative's ability to deliver to the packer.

In a pork merchandising system the cooperative would not only direct production but also operate one or more packing plants. One cooperative firm, owned and controlled by producers, would synchronize all the steps of pork production with consumer demand. The cooperative would assess the wholesale market for pork products sold to retailers and food service firms and direct producer-members to use the best available technology to produce the product.

Production and marketing services are short-run cooperative approaches that could benefit producers. In the long run, however, it is anticipated that the integrated pork merchandising approach will be necessary. A few firms may someday integrate an entire system to achieve efficiencies in production, processing, and distribution, and greater quality control. The distribution of benefits will depend on who centralizes the decisionmaking and thereby controls the system. The cooperative is the only form of organization that will put producers in control and ensure producers of their fair share of benefits.

Cooperative Strategies for the Pork Industry



David L. Holder and Ralph E. Hepp[1]

Progressive farmers, like most astute businessmen, realize that producer decisionmaking must reach beyond their immediate firm into other facets of the industry to advance their individual and common welfare. Over the years, farmers have achieved this objective, at least in part, by forming cooperatives. They have used these producer-owned and controlled businesses to solve common production and marketing problems, and to create new economic opportunities.

Hog producers are served by livestock marketing cooperatives that merchandise slaughter hogs to packers, and facilitate the flow of feeder pigs from pig producers to producers that do the finishing. A number of marketing techniques are being used. Hog producers also are served by general farm supply cooperatives that manufacture and retail a wide variety of production inputs including feed, seed, fertilizer, petroleum, and various types of livestock equipment.

The nature of pork production on the Midwest general farm probably explains the lack of specialized cooperatives serving hog producers. In many cases hogs are a supplementary enterprise on the general farm. However, major structural changes are occurring in pork production. Family swine farms are becoming fewer and larger and more specialized as they adopt large-scale, highly-technical production systems. Some hogs are being produced on large, sophisticated corporate farms.

At the same time, the marketing system is changing. Hog processing plants are being decentralized into production areas and hogs are purchased directly from producers through private negotiation, thereby avoiding established central markets. A small but potentially larger proportion of hogs are being produced under contractual arrangements. Individual producers, even large ones, lack the bargaining power in private negotiation without public prices and without public sources of information on prices, supply-demand conditions, quality needs, and other factors. As more hogs are sold direct to packers, on either a cash or contractual basis, national markets and public information become less reliable and less able to reflect market conditions as signals for producer decisionmaking.

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Family farm units can remain competitive if they adopt an efficient production and marketing system. Adapting to changing production technology will not, of itself, sustain the family farm. Producers must also encourage an efficient marketing and distribution system that supports the family farm and, at the same time, remains responsive to consumer wants. This means producers should review their need for cooperative services.

It may be time for producers to become more involved in the swine industry, not only to achieve efficiency and market power, but also to establish strong cooperatives that could direct change in the swine industry toward the best interest of producers by giving them a degree of control over their pork industry.

In developing a new role for cooperatives in the pork industry, many questions arise, such as: What are the appropriate strategies for cooperatives seeking to foster production on family farms? What strategies will achieve a high level of efficiency for the swine industry and funnel equitable benefits back to producers? And what types of cooperatives should assume the responsibility? This report seeks some answers to these questions as it traces the industry trends and develops alternative strategies for producers and their cooperatives in the pork industry.

Trends in Hog Production

Quantity Produced

Total hog production in the United States has varied between 80 and 100 million head of pigs a year over the last 25 years, except for the extremely small pig crop for 1975 (fig. 1). Major cyclical production peaks occur about every 10 years, with minor production peaks every 3 to 5 years. This is the traditional hog cycle. It remains to be an important phenomenon for hog producers as they adjust pork production to perceived profitable alternatives. As producers change production plans, farm input suppliers and pork processors also must adjust.

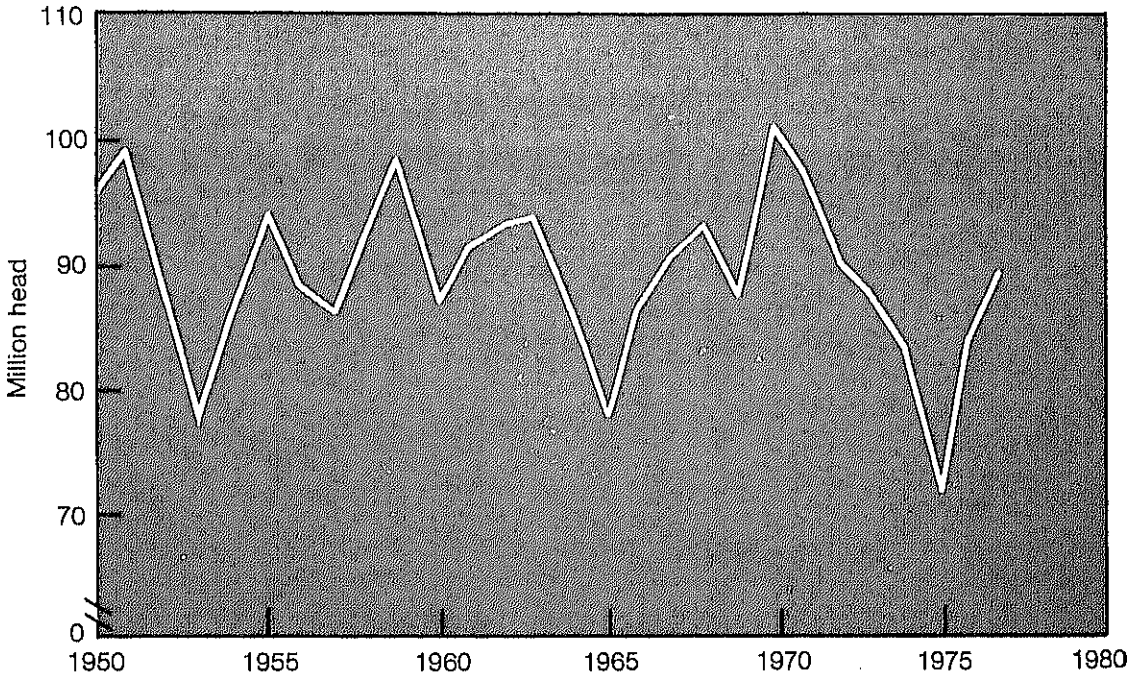
While there has been no moderation in the year-to-year production cycle, there has been a dramatic reduction in the seasonality (within year variation) of production. Quarterly data for 1950-75 from the 10 largest hog-producing States in the East and West North Central regions, where 75 percent of the pigs are farrowed, show the change (fig.2). In 1950 the large spring pig crop was 49 percent of all production. Since then, it has become relatively smaller and the winter, summer, and fall pig crops have become relatively larger.

Spring production remains the largest because of pasture farrowing, that for years has been the traditional hog production system on the family farm. However, the move to confinement farrowing and finishing has forced producers to use their facilities the year around and has enabled producers to benefit from higher prices in low production seasons. As a result seasonal production has become more level.

Regional Production Patterns

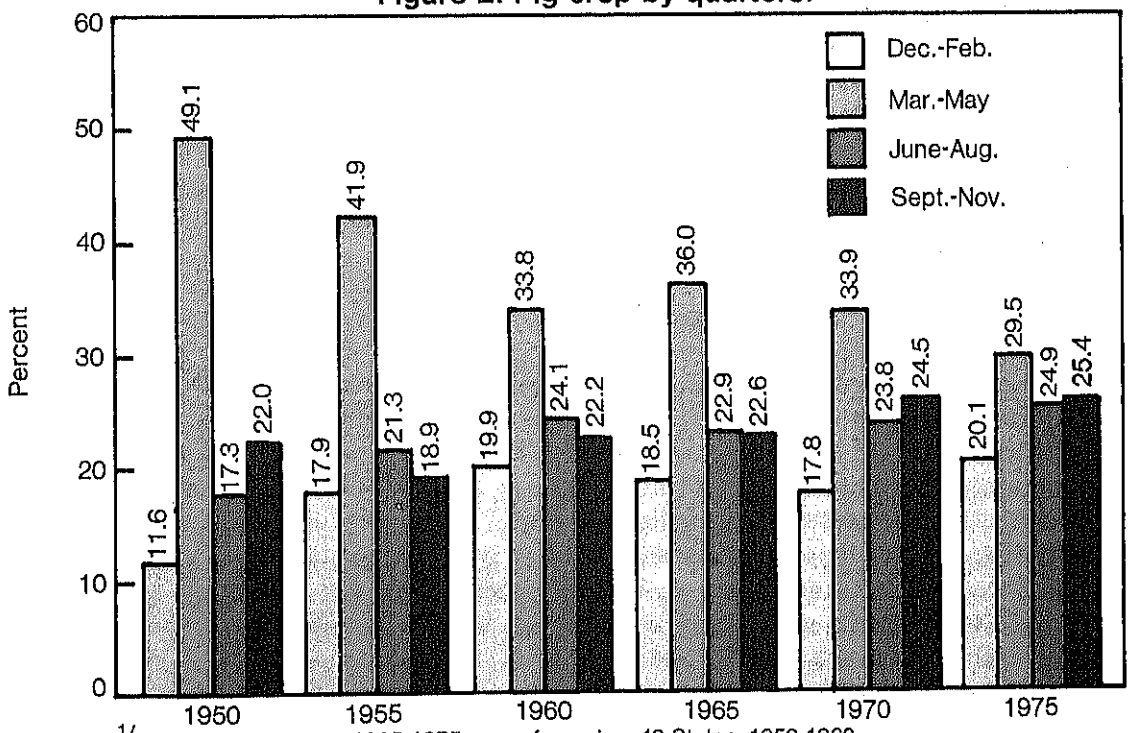
The East and West North Central regions in the United States produce about 80 percent of the hogs. One-half of the total U.S. hog output comes from the States of Iowa, Illinois, Indiana, and Missouri. Shifts in regional production have been marginal over the past 25 years. The West North Central States have increased production nearly enough to offset the decrease in the East North Central States (fig. 3). In just the past 10 years, the five States of Iowa, Wisconsin, Illinois, Indiana, and Ohio have lost a total 5.3 percent of the U.S. hog production to other States. Increasing in proportionate share of production

Figure 1. Pig crop, 1950-1977.



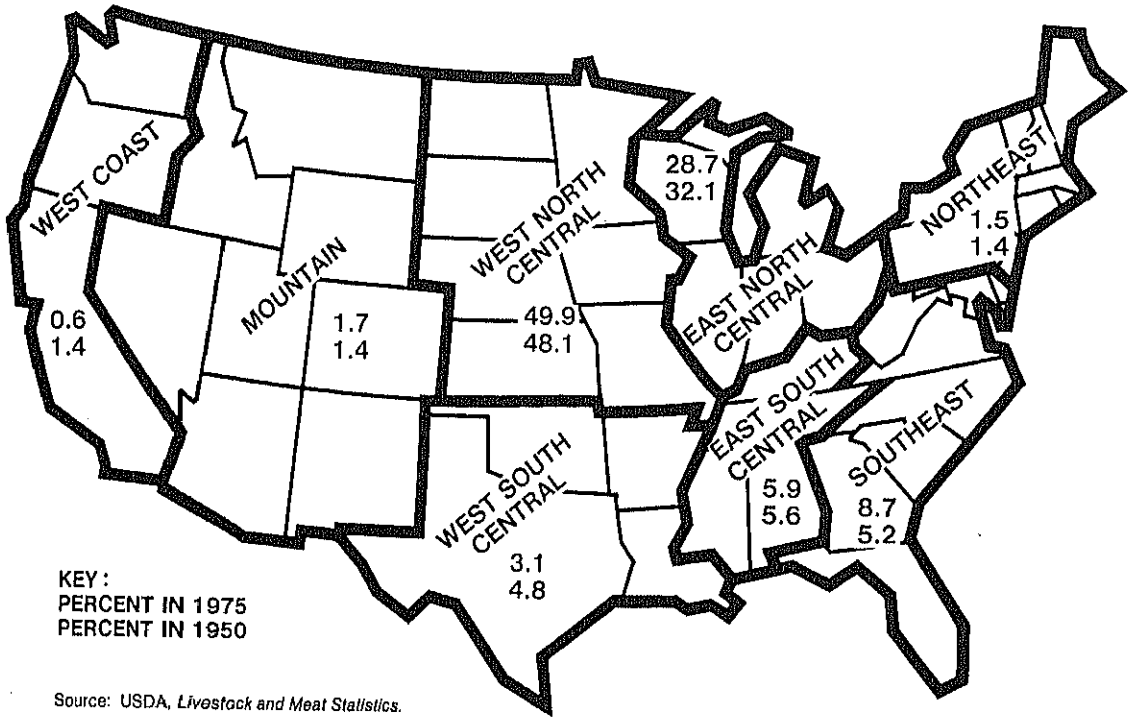
Source: USDA, *Agricultural Statistics, 1976;* USDA, *Livestock and Meat Situation,* Feb. 1977.

Figure 2. Pig crop by quarters. 1/



1/ Pig crop, 10 States, 1965-1975; sows farrowing, 48 States, 1950-1960.
Source: USDA, *Livestock and Meat Statistics.*

Figure 3. Regional distribution of hogs marketed, 1950, 1975.



Source: USDA, *Livestock and Meat Statistics.*

are the Southeast States of North Carolina and Georgia and the West North Central States of Minnesota, Nebraska, and Kansas (table 1).

Hog production is concentrated in the States that produce corn (table 2). Only marginal changes in proportionate share of hog and corn production have occurred among States in the last 10 years. In the future, corn and hog production trends are expected to stay together, and no major shift in hog production from the North Central Corn Belt States is expected.

Number and Size of Farms

The trend towards fewer farms selling hogs and pigs continues to drop faster than the general decrease in number of U.S. farms, as only 25 percent of farms had hogs and '69 compared with 56 percent in 1950. In 1950, 2.1 million farms sold hogs and 0.6 million farms sold hogs and pigs in 1969. While the swine industry still umber of producing units, two-thirds of the hogs marketed came from 20 e units—those selling over 200 hogs and pigs per farm in 1969.[2] However, today's standards, even many of these farms are small producing units. duction in numbers of small farms and the increase in numbers of large to continue.

f Census, *1969 Census of Agriculture*, Vol. II. Chapter 5, "Livestock Poultry and Livestock and Poultry

Table 1.—State hog marketings as percent of U.S. marketings, 12 largest hog-producing States, 1965-1974

State	Percent of U.S. marketings		Change 1965-1974
	1965	1974	
Iowa	23.9	22.7	-1.2
Illinois	14.2	12.8	-1.4
Indiana	8.7	7.6	-1.1
Missouri	7.2	7.1	-.1
Minnesota	6.3	6.8	.5
Nebraska	5.2	6.0	.8
Ohio	4.7	3.7	-1.0
South Dakota	3.5	3.4	-.1
Kansas	2.6	3.3	.7
Wisconsin	3.8	3.2	-.6
North Carolina	2.2	3.2	1.0
Georgia	2.0	2.6	.6
U.S. Marketings (1,000 head)	76,280	73,966	

Source: USDA, *Agricultural Statistics, 1976.*

Table 2.—Rank in hog and corn production, 12 largest hog-producing States, 1974

State	Rank in hog marketings	Rank in corn production
Iowa	1	1
Illinois	2	2
Indiana	3	3
Missouri	4	8
Minnesota	5	5
Nebraska	6	4
Ohio	7	6
South Dakota	8	15
Kansas	9	9
Wisconsin	10	7
North Carolina	11	10
Georgia	12	12

Source: USDA, *Agricultural Statistics, 1976.*

During the period 1964-69, farms selling more than 500 hogs and pigs increased their share of total production from 21 percent to 33 percent (table 3). The most recent 5-year period should show an equal or greater movement toward larger units. Relatively higher feed grain prices from 1972-76 increased net earnings from farms and should have resulted in fewer farmers marketing corn through hogs. With the advancing age of farmers and availability of nonfarm jobs in rural areas, small hog enterprises have become relatively less attractive. Those farmers remaining in hog production with confinement facilities typically operated hog enterprises of 1,000 to 1,500 head or more per farm. This size unit characterizes the typical modern hog farm.

Table 3.—Percent of hogs and pigs sold by farm size, United States, 1964 and 1969

Farm size (hogs and pigs sold per farm)	Percent of hogs and pigs sold	
	1964	1969
1 - 49	9.6	4.7
50 - 99	13.3	8.9
100 - 199	22.9	18.1
200 - 499	32.8	35.4
500 - 999	13.5	19.6
1,000 and over	7.7	13.3
All farms	100.0	100.0

Source: *1969 Census of Agriculture.*

Specialization

The traditional swine farm has been an integrated unit producing feed grains, feeder pigs, replacement gilts, and slaughter weight hogs. While the integrated system still dominates production, there is movement toward specialization. In 1964, 14 percent of the hogs marketed were farrowed on another farm and purchased as feeder pigs by the finisher. In 1969, 20 percent were purchased.

Large-scale confinement feeder pig production is a highly technical and labor intensive operation. Many Corn Belt farmers are purchasing pigs as they find better alternative uses; capital, labor, and management skills, and as they experience shortages of capable labor. On the other hand, many farmers find it advantageous to specialize in feeder pig production.

A more recent development towards specialization in the swine industry is the "farrowing corporation." Although most of these firms are not organized under cooperative statutes, they are operated like cooperatives and are considered to be cooperatives in this report. They produce feeder pigs for farmer investors who purchase the pigs and feed them on their own farms. A recent study[3] at the University of Missouri shows that the average farrowing corporation produces about 6,000 feeder pigs per year.

The study also shows that large volume hog producers, those selling more than 5,000 head, purchase most of the feed grains for their hog enterprises. Only 10 percent raised all their feed grains, 51 percent raised none of it, and 22 percent raised half or more, but not all of it. The typical family farm, on the other hand, still produces most of the feed used for the hog enterprise and is expected to continue this practice.

Confinement Technology

Pasture farrowing and finishing has largely given way to confinement hog raising. Confinement production has come about simultaneously with new technological developments and refinements in waste handling and disposal, feed processing and distribution, environmentally controlled atmosphere, farrowing crates, and hog grouping and movement. New confinement systems allow a larger number of hogs to be handled per unit of

[3]V. James Rhodes and Glenn Grimes, *Large Volume Hog Production in the U.S., A 1975 Survey*, Agricultural Experiment Station, University of Missouri-Columbia.

labor. The capital for labor substitution in pork production is expected to continue as more farmers adopt the new technology. Although swine management is still somewhat of an art, technical production practices and confinement systems can be taught, and they lend themselves to management specialization, even on the family farm.

Capital and Credit Use

To modernize swine production with confinement technology will require large amounts of capital and credit. As small family farm units discontinue hog production and larger family farm and corporate units increase in production, capital-intensive production systems will be used, and large amounts of fixed capital and operating capital will have to be borrowed.

Financial Risk

Financial risk increases as the pork production units become larger and more specialized. Risk is a major management factor for the large scale producer due to disease, price changes, and credit use. Disease is a production problem for the small producer, but a much more serious factor for the large producer with concentrated production. Although antibiotics and other disease control means have improved, major breakthroughs in swine disease control have not been found. Continuing public debate over the use of subtherapeutic doses of antibiotics adds to the uncertainty. The likelihood remains that a major disease outbreak could cause serious financial loss for the producer. Disease prevention and control continues to be a significant cost item in production.

Price changes always have been a source of financial risk to hog producers, but the potential for very large losses in any one year has become greater with increasing price variability, and larger numbers of hogs in a single farm enterprise. Corn and hog prices varied within a relatively narrow range from the 1960's to early 1970's. From 1972 to 1976 the range has increased significantly (fig. 4). Because corn represents the largest single cost factor in pork production, an unfavorable price ratio can result in very low returns. The years 1971 and 1974 had very unfavorable price ratios for hog producers (fig. 5). Serious yearly cash flow problems for producers can result because of price changes, especially for producers purchasing feed grains.

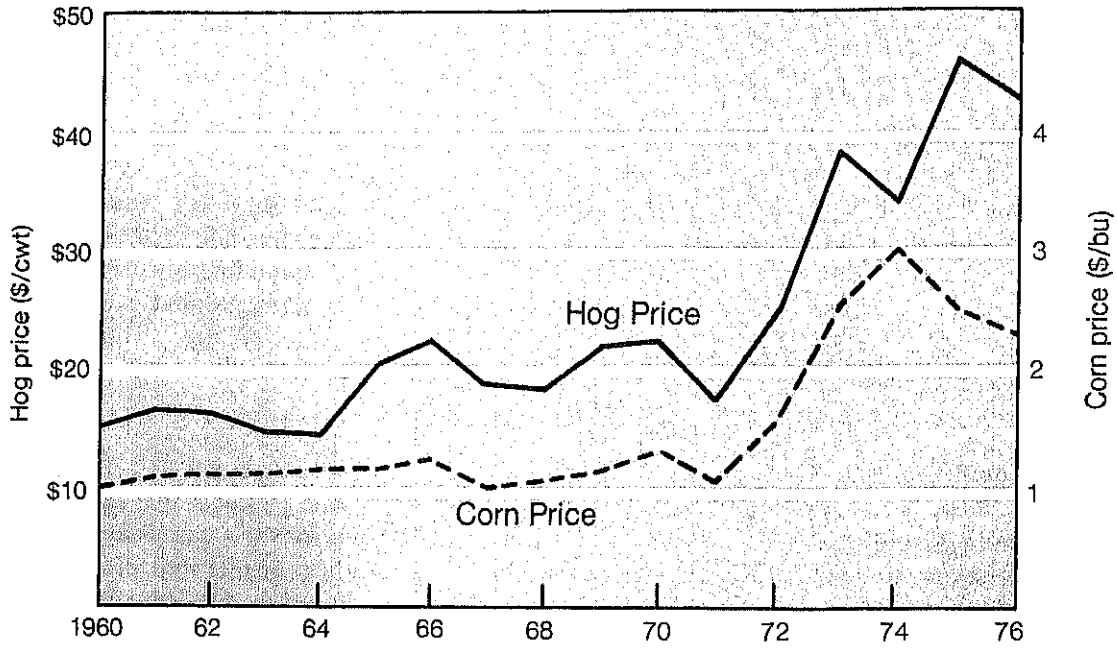
Financial risk is further enhanced in newer, larger confinement units because large amounts of debt capital are used. Because fixed costs are large and continuous with heavy debt commitments, maximum production must be maintained even during periods of unfavorable prices. During the year, returns may not be high enough to cover interest and principal payments, hence flexible loan repayments have been geared to fluctuating cash flows.

Production Performance

The number of pigs weaned per litter is a composite measure of efficiency representing many factors in the farrowing phase. The average number of pigs weaned improved over time until the later 1960's, then declined slightly (table 4). Conversion to confinement, improved breeding stock, use of better management practices, and newer disease control methods are important reasons for increased farrowing performance.

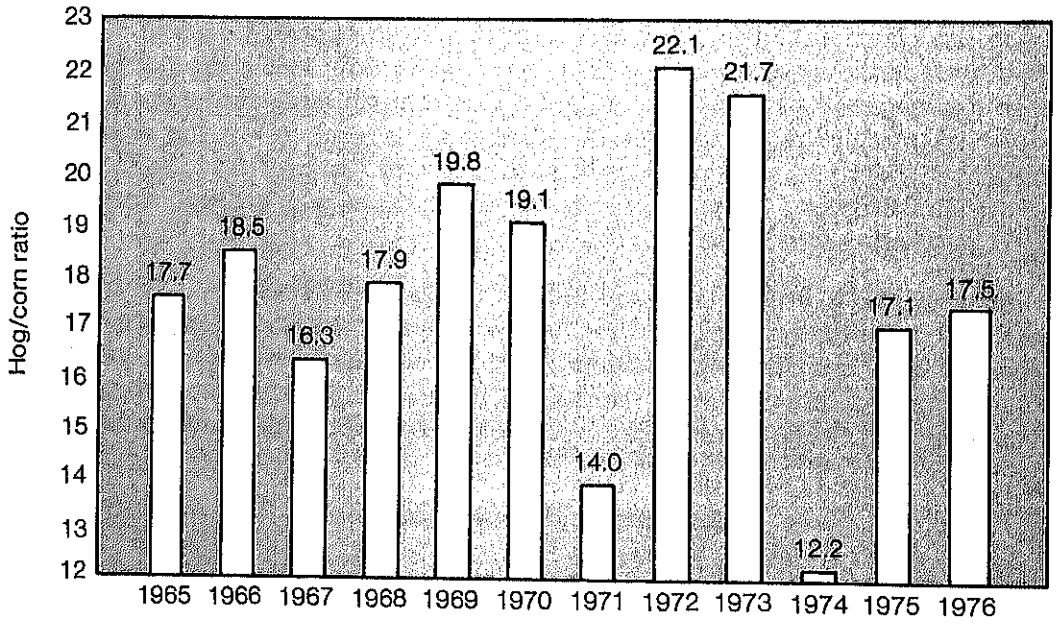
Feed conversion is an important measure of production efficiency in the hog-finishing phase. Pounds of feed per pound of gain have been decreasing over time. Feed con-

Figure 4. Hog and corn prices received by farmers, 1960-1976.



Source: USDA, *Agricultural Statistics, 1976.*

Figure 5. Hog-corn price ratio, 1965-76.



Source: USDA, *Livestock and Meat Statistics.*

version of 3.0 to 3.5 is currently attainable and common on the larger, better managed swine operations. Some research results have broken below the 2.0 level.[4]

Pork Quality

Another measure of improving production efficiency is the increasing lean/fat ratio of slaughter hogs. Genetic improvement in breeding stock and better management practices have enabled the producer to respond to consumers' demand for a leaner product. Over time, production has been converted from the excessively fat hog to the meat-type animal (table 5).

The market does not always reimburse producers for improvements in the lean/fat ratio. The use of quality grades for pork products in wholesale and retail channels that are related to live hog grades would enhance the movement toward a leaner product. The grades would give greater rewards to producers with leaner hogs relative to producers with fat hogs and encourage the average producer to improve his production.

The trend toward improved production performance is expected to continue as production shifts to larger, better managed operations using modern technology. Only those producers following recommended technical practices and obtaining good performance will be able to grow larger—and do it profitably.

Table 4.—Pigs weaned per litter, 1950-74

Years	Pigs per litter
1950-54	6.65
1955-59	7.01
1960-64	7.15
1965-69	7.32
1970-74	7.21

Source: USDA, *Livestock and Meat Statistics.*

Table 5.—Lard yield of slaughter hogs, 1950-75

Year	Pounds lard per 100 pounds live hog
1950-54	14.5
1955-59	14.4
1960-65	12.9
1965-69	10.7
1970-74	7.9
1970	9.4
1971	8.8
1972	7.8
1973	6.8
1974	6.8
1975	6.1

Source: USDA, *Livestock and Meat Statistics.*

[4]Results from Farmland Industries, Inc. swine testing stations.

Feed Demand

The traditional small farm swine producer grows his own corn and purchases a feed supplement of protein fortified with vitamins and minerals. With the change to larger family farm production and more integrated production systems, there is a shift in feed demand toward the purchase of basic feed ingredients (soybean meal and vitamin-mineral premix) by some producers and complete hog rations by others.

Most large hog producers presently purchase feed ingredients rather than a complete hog feed, or a feed supplement. Corn or grain sorghum is raised on the family farm and combined with a vitamin-mineral premix and a protein source, such as soybean meal. The hog ration is formulated on the farm in a feed processing-distribution center. Large independent producers are expected to continue using feed ingredients. On the other hand, farmers with production contracts are expected to use a complete feed, similar to the practice in the poultry industry. Also the recent experience with farrowing corporations has shown that these units purchase a complete feed.

Government Regulations and Restrictions

Society has become more concerned about the environment, consumer health, land use, labor safety, and other factors and this has resulted in increased restrictions on agriculture. In the past, farmers have usually been exempt from many government regulatory programs, but more recent regulations of the Environmental Protection Agency (EPA) and other Federal and State agencies cover agricultural production, especially that of larger producers. Restrictions through government regulations cause pork producers to carefully consider site selection, incur higher costs and delays in obtaining approval for new facilities, and in general incur higher overhead production costs. Restrictions also delay the availability of new disease control drugs. These trends are expected to continue.

Developments in Swine Production Systems

Swine production traditionally has been a supplementary enterprise on the family farm. Swine is an alternative market outlet for corn and family labor during winter months and slack periods of the crop growing seasons. Recently, however, new swine production systems have developed as a result of economic, technical, and farm ownership changes. Rather than one production system, the swine industry now has five identifiable and competitive systems. Each has unique characteristics that show the dynamic structure of the industry, the trend of future developments, and future pork production-market coordination needs.

Small-Scale Farrow-Finish Swine Enterprises on Family Farms

The predominant type of swine enterprise is a small-scale, supplementary operation that farrows feeder pigs and finishes them to slaughter weight. The farm produces feed grains for the swine and a small-scale beef or dairy enterprise. Soybeans, wheat, or other cash crops are produced and sold. In good crop years excess feed grains are also sold.

The farm is typically organized as a sole proprietorship with family management nd labor. Hogs are sheltered in existing farm buildings, remodeled to facilitate changes ı enterprise size.

The Census of Agriculture shows 434,485 farms farrowed 10.2 million litters in 969. Forty-seven percent of all slaughter hogs were produced on farms that farrowed less ıan 50 litters per year, while 28 percent were from farms that farrowed from 50 to 199 tters, 5 percent came from farms farrowing 200 or more litters, and 20 percent from ırms that did no farrowing. Judging from recent trends, there will be fewer farms pro- ucing and finishing hogs, and more production coming from larger units. But for several ears most production still will be from farms farrowing less than 200 litters and selling ss than 1,500 hogs per farm.

Farm management budgets show the small-scale, farrow-finish swine enterprise to e as profitable as other small-scale livestock and crop enterprises on the general farm. mall units are also competitive with larger, total-confinement production systems ecause depreciated facilities, excess family labor, and farm-produced feeds are available ɔ them. Because fixed costs are low, swine production can be temporarily dropped and ed grains sold if the relative profitability of swine is less than competing farm enter- rises.

In spite of the flexibility and relative profitability of the small-scale, farrow-finish wine enterprise, the production system will continue to become less numerous and pro- uce a smaller share of the total pork. These are the primary reasons. (1) The number of eneral farms is decreasing; therefore, fewer farms are available for small-scale swine pro- uction. (2) Farms are becoming more specialized with many farmers cropping only, or ropping with only one animal enterprise. (3) Swine production itself is becoming more pecialized, and a larger number of farmers are either producing feeder pigs or finishing eeder pigs, but not both. (4) Although total confinement production facilities produce ork for about the same total production costs as the small-scale production units, con- inement results in greater volume per unit of labor. (5) An increasing number of the fam- y farm units have multi-owners and need larger enterprises to generate sufficient income.

Confinement Farrow-Finish Swine Enterprise on Family Farms

As swine confinement technology is introduced and expanded, an evolutionary hange occurs in the farrow-finish operation on family farms. Swine production usually hanges from a supplemental enterprise to a primary one. The farm concentrates on swine roduction to take full advantage of capital-intensive confinement buildings and equip- nent. Rather than have 200 to 800 slaughter hogs to sell, the confinement units on family arms produce 1,500 or more hogs; some produce 10,000 to 15,000 head.

Owner-operators of confinement swine farms are not new to agricultural produc- ion. Many start farming with their fathers on a general livestock and crop operation. As imes change, the swine enterprise grows with the farm. As a son or son-in-law joins the usiness, farm enlargement provides income and employment for the new partner. Only imited amounts of outside labor are hired, depending on the size of the operation.

The initial expansion usually involves converting some old buildings. Later, a new entralized farrowing facility, finishing barn, and a feed storage and processing center are uilt as the expansion progresses. The complete confinement system evolves as new tech- ıology is adopted and new capital is available from retained earnings and local credit ources.

Completely integrated units for slaughter hog production are common. Corn is produced on the farm for the hog enterprise, as well as cash crops of wheat and soybeans for the cropping rotation. However, some producers purchase part of the corn for the swine enterprise and do not rely solely upon production from the family business. Feed is stored, ground, and mixed in the feed processing and distribution center. Replacement gilts are raised and usually only boars are purchased from commercial breeders.

Because hog prices and feeding costs vary from year to year, the specialized hog business has widely fluctuating net returns. However, a constant level of production is maintained from year to year because fixed cost commitments are large and continuous. The continuous output provides "average returns" by selling a similar amount of hogs in high-price as well as low-price periods. Good financial management is needed to ensure that debt repayment and cash production costs are paid during low-price periods from reserves accumulated during favorable price periods.

Confinement farrow-finish production units operated by independent family farmers are present in the Midwest and elsewhere, and more are being developed. The businesses are cost competitive with traditional general farm production systems, and they compete effectively with contract and corporate production systems.

Specialized Farrowing or Finishing Swine Enterprises on Family Farms

Family farm swine operations have specialized in another form by farrowing and selling feeder pigs or by buying and finishing feeder pigs. Often these functions are carried out on separate farms; however, many farms sell both feeder pigs and slaughter weight hogs.

The 1969 Census of Agriculture shows 112,000 farms (economic class I-V) selling slaughter hogs but not farrowing. These farms account for 20 percent of slaughter hogs sold during the year. A total of 119,000 farms, 22 percent of all farms, sold feeder pigs, but few details are shown as to the degree of specialization.

Like most swine production, specialized feeder pig production or feeder pig finishing is believed to occur on relatively small farms, and is probably combined with other livestock or with crop enterprises. For example, the 112,000 farms that did no farrowing sold an average of only 131 head per farm. The average number of hogs and pigs sold by all hog farms was 161 head. Michigan farm business records show that most farmers purchase less than 1,000 pigs a year. There are, of course, a few exceptions. The Census shows only 782 farms farrowing 200 or more litters per year and selling feeder pigs, an average of 1,423 head. These farms accounted for only 8 percent of all pigs sold.

Like the small-scale, farrow-finish enterprise, small-scale specialized enterprises produce hogs in existing buildings, or on pasture by the traditional swine production methods. Specialized farrowing and finishing systems will continue to be an important enterprise for the general farm, but the number of such farms will probably decrease for some of the same reasons given for the expected decrease in the number of small-scale, farrow-finish swine enterprises.

Many farmers who desire to finish feeder pigs have had difficulty finding adequate supplies of good quality pigs at reasonable prices. As a result, farrowing cooperatives (including all farrowing corporations operating like cooperatives) have developed to supplement small-scale, specialized, finishing enterprises. Farrowing cooperatives are based on confinement technology, hired labor and management, farmer-owners, and purchased feed. Farrowing units are organized by swine producers who want to finish feeder pigs,

but do not wish to farrow. They usually have extensive cropping programs and some facilities to finish feeder pigs, but obsolete farrowing facilities. Marketing corn through hogs is the primary livestock objective for the farm, and the off-farm investment in farrowing complements the independent family farm operation. It provides a needed farm input produced under the farmer's control, and is an input provided at production cost.

Farrowing cooperatives include 10 to 40 farmer investors who purchase shares of stock, according to the number of feeder pigs desired. These units typically range in size from 400 to 650 sows, while a few have as many as 1,200 sows.

Swine farrowing cooperatives are a new organizational vehicle for farmers to obtain feeder pigs. They are noteworthy because they represent one of the few instances in which U.S. farmers produce cooperatively. If the organizations can obtain well-trained managers, the number of units are expected to increase and become an important factor in future feeder pig production.

At the present time, only a few feeder pig finishing cooperatives have been developed by farmers. More finishing units could be organized by feeder pig producers if they discover greater net returns by finishing their pigs, and if they have the resources and desire to continue their operations through the finishing stage. The finishing cooperatives could be operated on a custom feeding basis as is commonly done for cattle, or on a condominium basis where individual producers invest in their own pens.

Corporate Confinement Swine Production

A small, but growing number of large, corporate, hog operations are producing a larger percent of the annual hog output. The University of Missouri study mentioned earlier surveyed large-volume hog producers who subscribed to a monthly hog magazine, and who claimed to market 5,000 head or more annually.[5] The 550 large volume producers from which data were obtained expected to market 5.5 million slaughter hogs in 1975, or about 6 percent of U.S. slaughter. Although a number of the producing units are farrowing cooperatives or large-scale family farm farrow-finish operations as previously dscussed, 56 firms in 1974 marketed 15,000 head of hogs or more and several marketed 50,000 head or more during the year. It is assumed that these very large units are corporate confinement operations and not family farms or the farrowing cooperatives supporting family farms although the study results make no distinction. Corporate confinement swine production is arbitrarily defined as units selling more than 15,000 head annually.

The 56 firms marketed 1.5 million hogs or 1 percent of the total hogs slaughtered in 1974. The average firm sold over 27,000 hogs in 1974, about 2,000 more than 1 year earlier. Most of the feed grains were purchased for these operations, and 77 percent of the firms farrowed pigs and finished slaughter hogs. One-half of the market hogs resulted from purchased feeder pigs.

A Nebraska firm illustrates the type of units in this corporate production system. It is a farrow-finish operation that farrows 9,000 sows and markets 150,000 head annually. The operation is a partnership where one partner is the general farm manager and the other an investor. The farm employs 45 people to manage and operate the swine enterprise and demonstrates that hired management can obtain favorable production performance.

[5]Rhodes and Grimes.

One could rightfully ask: What is the difference between a corporate confinement unit and the traditional family farm unit? In a family farm unit the family provides the equity capital; much of it comes from internal savings from past agricultural activities. The family also provides management and a significant part of the labor. In a corporate unit equity capital usually comes from investors that are outside of agriculture; these investors hire managment and labor to operate the farm. Family farms that are legally incorporated for tax and estate planning purposes are included in the family farm group.

Contract Swine Production

Only about 1 to 2 percent of all pork is currently produced under contracts. However, agribusiness firms have a developing interest in swine contracting systems as a market outlet for processed feeds and as a means of benefiting from the efficiencies of a more coordinated production and marketing system. Trial production contracts are operating in the Midwest and South with the objective of expanding this type of production system.

Under a production contract, the integrator and family farm producer agree to produce feeder pigs or to finish feeder pigs. The provision of production inputs is shared as follows: The producer provides the facilities (including property taxes, insurance, interest, and repairs), utilities, and labor. The integrator provides feed, replacement breeding stock or feeder pigs, veterinarian and medicines, transportation of livestock to the farm and to market, and management assistance to the producer.

The producer's income is a per feeder pig or per slaughter hog payment based upon a schedule related to production performance, such as pigs saved per sow or pounds of hog produced per 100 pounds of feed. Higher payment rates are paid for top performance; therefore, the producer has an incentive to reach high standards.

Estimated Output from Each Production System

The 1969 output of hogs from each production system is estimated from the Census of Agriculture and other USDA reports (table 6). The 1974 percentage is estimated from other reports. Over the 6-year period, small-scale, farrow-finish production on family farms has decreased from 75 to 55 percent while other production systems, especially large-scale confinement, farrow-finish production on family farms, have increased their share of output. These trends are expected to continue.

Table 6.—Estimated percentage slaughter hog output from five production systems, 1969 and 1974

Swine production system	Percent of hogs sold	
	1969	1974
Small-scale farrow-finish on family farms	75	55
Large-scale confinement farrow-finish on family farms	3	15
Specialized farrowing or finishing on family farms and cooperative production	20	25
Corporate confinement	1	3
Contract production	1	2

Source: *1969 Census of Agriculture* and USDA and university studies.

Situation and Trends In Hog/Pork Marketing

Market Channels

As farms have become larger and slaughtering plants have relocated from city to country, methods of marketing have changed. Use of terminal markets has greatly declined, while a variety of country marketing methods have become popular (table 7). An analysis of where packers have bought hogs over the years shows the shift. In 1923, 76 percent of slaughter hogs were bought at terminal markets. In the 1940's, 40 to 47 percent were bought at terminals. That share continually declined to around 17 percent in the 1970's. Country purchases (including direct, dealer, and order buying purchases) increased from 24 percent to 70 percent over the same period. Auction markets made up the balance since the late 1930's with a relatively constant 12 to 15 percent.

Country purchases are handled by a large number of country hog marketing facilities (table 8). In 10 Midwest States there were 632 auctions, 1,068 dealer buying stations, and 615 packer buying stations (including places to sell at packing plants). In contrast,

Table 7.—Distribution of packer livestock purchases by market outlet, selected years, 1923-75

Year	Terminal			Auctions[1]			Direct or country dealers[1]		
	Cattle	Hogs	Sheep and lambs	Cattle	Hogs	Sheep and lambs	Cattle	Hogs	Sheep and lambs
					Percent				
FI Series:									
1923.....	89.6	76.0	85.4	- - -	- - -	- - -	10.4	24.0	14.6
1930.....	88.2	59.9	84.7	- - -	- - -	- - -	11.8	40.1	15.3
1940.....	75.8	46.7	63.8	- - -	- - -	- - -	24.2	53.3	36.2
1950.....	74.9	39.9	57.4	- - -	- - -	- - -	25.1	60.1	42.6
P&SA Series:									
1960.....	45.8	30.3	35.4	15.6	8.7	10.6	38.6	61.0	54.0
1961.....	42.3	29.2	36.8	19.7	11.2	10.9	38.0	59.6	52.3
1962.....	42.6	29.3	35.4	18.8	11.1	15.2	38.6	59.6	49.4
1963.....	39.1	26.6	30.0	17.8	12.7	14.0	43.1	60.7	56.0
1964.....	36.5	23.8	28.6	18.9	12.1	13.7	44.6	63.1	57.7
1965.....	34.0	23.4	25.5	20.9	13.7	12.1	45.1	62.9	62.4
1966.....	31.0	22.1	21.9	19.8	15.2	13.5	49.2	62.7	64.6
1967.....	28.7	18.8	19.0	18.2	15.5	16.2	53.1	62.7	64.8
1968.....	24.7	19.3	18.6	18.3	14.1	15.0	57.0	66.6	66.4
1969.....	21.2	18.9	16.1	17.0	13.7	13.1	61.8	67.4	70.8
1970.....	18.4	17.1	15.1	16.4	14.3	12.4	65.3	68.5	72.5
1971.....	15.9	16.9	13.6	15.5	13.8	12.3	68.6	69.3	74.0
1972.....	13.2	16.3	13.7	14.6	13.3	12.0	72.2	70.4	74.3
1973.....	11.9	17.3	12.3	15.1	12.4	14.7	73.0	70.3	72.9
1974.....	13.9	17.6	11.5	16.4	12.4	13.5	69.6	70.0	75.1
1975.....	14.4	16.3	10.0	19.7	12.1	15.6	65.9	71.6	74.4

[1]Auctions included with direct or country dealers for 1923-50. Auction market purchases were not significant until about 1940.
Source: Packers and Stockyards Administration, USDA *Resume*, selected issues.

Table 8.—Estimated number of locations where farmers can market butcher hogs, by State and type of market, December 1975

State	Terminal markets	Auctions	Dealer buying stations	Packer buying stations[1]	Total
Ohio	1	41	96	44	182
Indiana	2	43	100	35	180
Wisconsin	1	31	89	35	156
Illinois	4	60	127	65	256
Minnesota	1	42	90	65	198
Iowa	2	114	357	275	748
Missouri	4	96	105	20	225
South Dakota	1	51	21	15	88
Nebraska	1	82	59	48	190
Kansas	1	72	24	13	110
Total	18	632	1,068	615	2,333

[1]Includes at-plant buying locations.

Source: Based on number of scales registered with Packers and Stockyards Administration, USDA.

there were only 18 terminal facilities. The proliferation of country facilities in the 1940's and 1950's met head-on with the trend toward larger production units. As a result many of these marketing facilities are unnecessary. Even fewer facilities will be needed in the future as truckloads of hogs will be moved directly from farms to packing plants. The special survey[6] of large hog producers shows that they ship 78 percent of their hogs directly to the packing plant and only 15 percent to local buying stations.

Pricing and Information

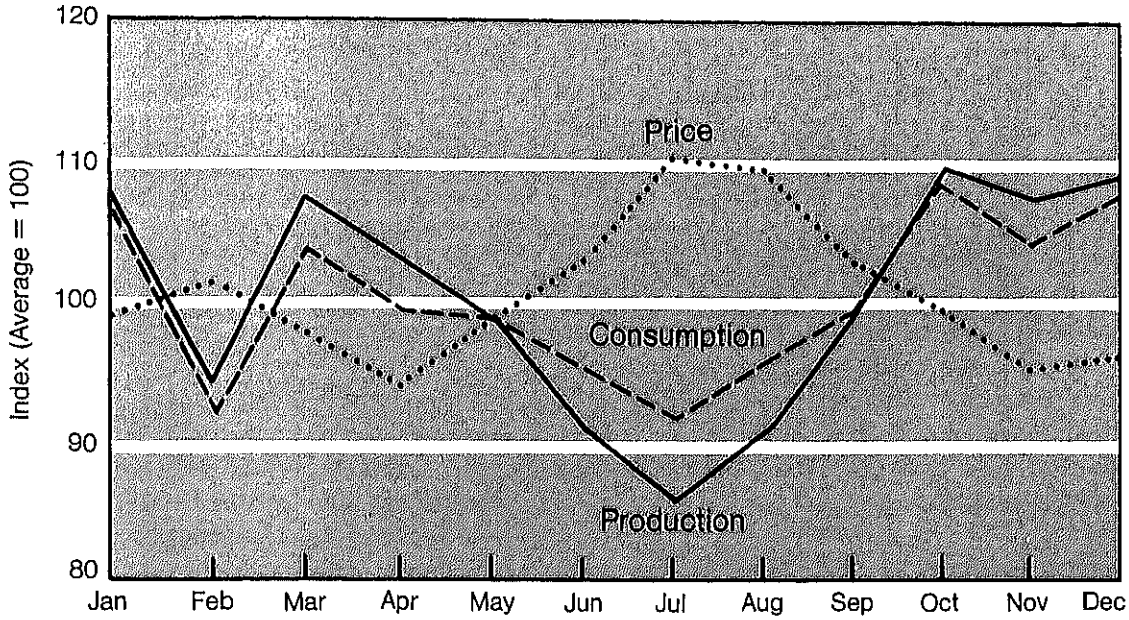
The trend toward more country marketing means more direct price negotiation between producers and buyers. In auction and terminal market transactions producers hire experienced agents to sell for them, but in the country transactions producers must be able to negotiate prices on their own. Producers must be skillful not only in negotiating acceptable prices with buyers, but also in predicting future prices to make good production decisions, such as how many hogs to produce, what quality, when to produce them, and how heavy?

Price is the result of several supply and demand factors, many of which vary by the hour. Other factors are more seasonal and hold for a month or more, while still others are cyclical and span several years. The cyclical price pattern repeats itself every 3 to 5 years in reaction to the production cycle (fig. 1). The seasonal price and production patterns are shown by monthly indexes in figure 6. Seasonal prices are highest in the summer months of June through September when production is lowest. Prices are lowest in the fall and winter months when production is high.

Extremes in the seasonal price index are tempered somewhat by storage activities that keep the consumption index below the production index in winter and above in summer. Another factor tempering the seasonality of prices is the seasonality of demand that coincides with the seasonality of production. Figure 7 shows that consumers purchase

[6]Rhodes and Grimes, pp. 12-14.

Figure 6. Monthly indexes of hog production, consumption, and prices. [1/]



[1/] Based on 1958-75 data. Prices of barrows and gilts, 7 markets; pork production from commercial slaughter; civilian pork consumption from commercial production.

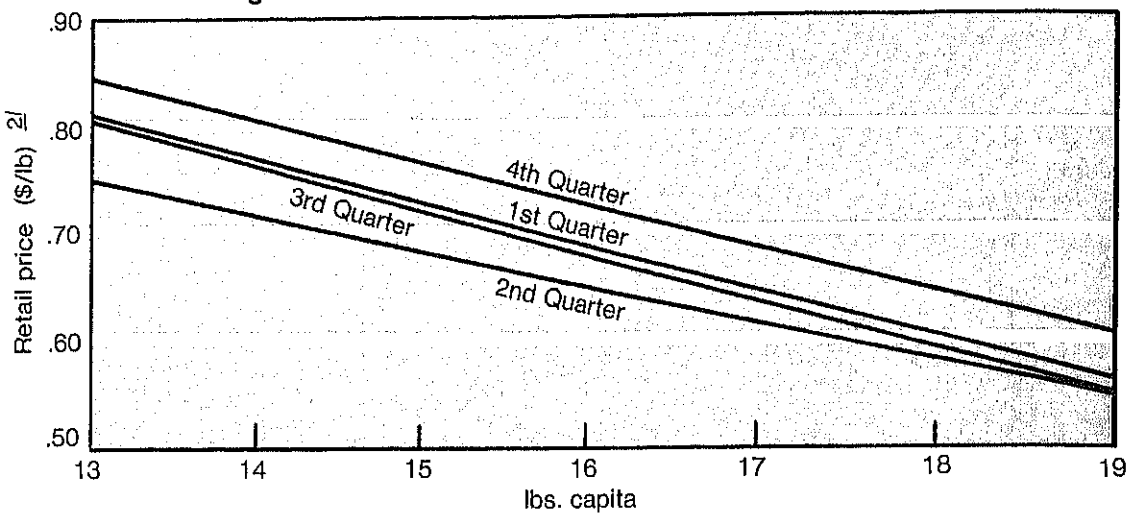
Source: USDA, *Livestock and Meat Statistics.*

more pork per capita at the same retail price in the fourth quarter than the second and third quarters. For example, at $.70 per pound consumers will buy 14.6 pounds in the second quarter, 15.5 in the third quarter, and 16.6 pounds in the fourth quarter.

Terminal markets currently handle only 17 percent of all hogs sold, but they continue to be a major factor in determining hog prices throughout the country. Theoretically, any seller or buyer can go to the terminal market if he feels there is some price advantage in doing so. Hence, terminal prices should stay in line with supply and demand conditions throughout the country. For this reason the terminal is referred to as a "barometer" of market conditions. However, many producers and country traders know the "barometer" does not always work very well, and they have turned to "interior" hog market reports, wholesale pork prices, and other sources of information to supplement terminal market price reports.

A few producers use futures contracts as a method of selling hogs at favorable prices and as a hedge against price declines. Futures contracts are priced several months in advance of when a producer's hogs will be ready for slaughter. If at some time during the production period, the futures price is higher than what the producer anticipates receiving at market time, he can sell the hogs by contract for future delivery. Some producers who are unwilling or financially unable to take price risks may sell their hogs by futures contract as production begins although their anticipated market price is higher than the futures price. These producers are more interested in locking in a price for delivery time than in receiving the highest possible price. In both cases the hogs may be delivered as specified in the futures contract or the contract may be repurchased and the hogs sold through the producer's normal market channels.

Figure 7. Seasonal demand for pork at retail. [1/]



[1/] Based on 1965-1975 data.
[2/] In constant 1967 dollars.
1st Quarter: $Y = 1.3491 - .0413X$ ($R^2 = .831$)
2nd Quarter: $Y = 1.2001 - .0341X$ ($R^2 = .881$)
3rd Quarter: $Y = 1.3565 - .0421X$ ($R^2 = .965$)
4th Quarter: $Y = 1.3943 - .0416X$ ($R^2 = .919$)
Y = dollars/pound, retail
X = pounds consumed/quarter

Source: Derived from USDA, *Livestock and Meat Statistics.*

A relatively new form of direct marketing, used for only about 1 percent of all hog marketings, involves the use of forward deliverable contracts.[7] Most forward hog contracts are "market-specification" contracts where a producer owns the hogs and all the inputs, and retains control over all production decisions. He simply agrees with a buyer, usually a packer, to deliver a specified quantity and quality of hogs at a specified time for an agreed upon price. Producers will generally not enter such a contract unless the forward price looks favorable when compared with the anticipated market price at delivery. Some producers, however, are almost forced to contract because of high debt/equity ratios that cause their bankers to make new loans contingent upon fixed price contracts. While most contracts are between a producer and a packer, some producers may contract with a livestock dealer or feed dealer. Very few hogs are grown under "resource-providing" contracts, as used in the broiler industry. (See earlier section, "Contract Swine Production," for a more complete description of resource providing contracts.)

Packers would benefit most by contracting because costs probably could be reduced by making the flow of hogs more uniform. However, packers are unwilling to contract a majority of their production because of uncertainties in wholesale markets. Except for producers with high debt/equity ratios, producers are generally unwilling to contract and thereby limit their decisionmaking power unless premium prices are guaranteed.

At all levels of the hog-pork subsector there is room to improve the flow of information about price, quality, quantity, and other factors. This flow of information is essen-

[7] Ronald L. Mighell and William S. Hoofnagle, *Contract Production and Vertical Integration in Farming, 1960 and 1970*, ERS-479, ERS-USDA, April 1972, p. 5.

tial for competitive and efficient operation of the free enterprise system. The decentralization of trading has resulted in fragmented information about the supply and demand of hogs. As the volume of hogs passing through terminal markets has declined and the number of buyers has become smaller, more and more people doubt its ability to be a representative barometer of supply and demand conditions. Even the interior hog market reports, wholesale pork prices, and other sources of information have their shortcomings. Information on private transactions is difficult and expensive to collect and disseminate quickly so it can be used as a basis for current and future decisionmaking.

Wide fluctuations in day-to-day hog prices are the result of inadequate information about the supply and demand for hogs. The fluctuations occur as buyers and sellers attempt to discover prices that will balance the flow of hogs from farms to packing plants with the flow of pork from packing plants to consumers. Some seasonal and cyclical fluctuations are also caused by inadequate information and the inability of producers and packers to use what they already have available. However, information is not free. Producers, packers, and government agencies spend thousands of dollars each week for collecting, disseminating, and analyzing market reports. In any attempt to improve information, cost-benefit ratios must be considered.

Another area needing attention is that of price differentials paid for quality. Many hogs still are bought by packers on the basis of average weight per lot rather than on the basis of weight and quality of individual hogs. Only 7 percent of all hogs slaughtered are traded on a carcass grade and weight basis.[8] Three factors limit the effectiveness of current carcass grade and weight trading. One, packers use their own grades instead of Federal grades, thereby limiting the ability of producers to compare prices among packers and to translate results into production practices. Second, packers do the grading rather than turn it over to a disinterested third party. Third, producers do not have sufficient records for tracing carcass characteristics back to parent stock to control quality in succeeding generations. On the wholesale level there are no uniform grades for pork, and packers promote their own brands as guarantees of quality. However, quality of a given brand is not always constant.

Slaughter Plants

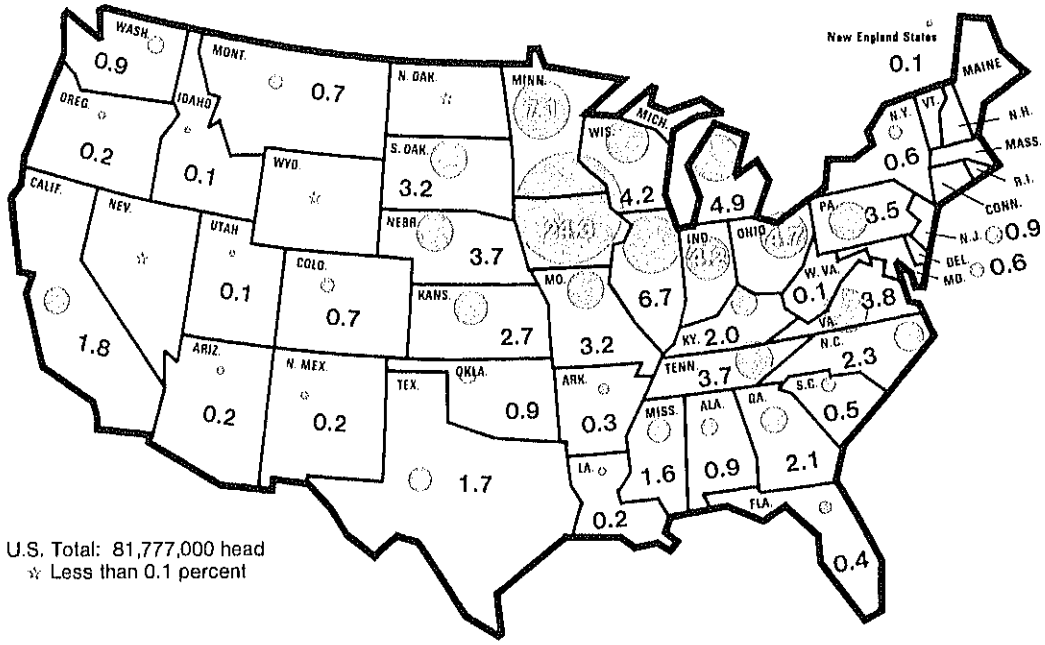
Hog slaughter is concentrated in the 12 states of the East and West North Central Regions where 80 percent of the hogs are marketed and 65 percent are slaughtered (fig.8). Production and slaughter have been concentrated together in this region for several decades. However, a number of changes in market structure have occured within the region, as well as in other regions.

Improvements in refrigeration, over-the-road trucking, and larger farm production units, plus higher urban wage rates and problems of urban congestion, are some of the factors responsible for decentralization of the meatpacking industry from major population centers to production areas. The best illustration of this shift is seen in the increase in percentage of hogs killed in Iowa. In 1946 Iowa produced 19 percent of the hogs and slaughtered only 12 percent. By 1974, Iowa produced 22 percent and killed 24 percent (table 9).

Figure 9 shows the location of plants slaughtering 250,000 or more head in 1974. In that year, 93 of the plants operated by 49 firms, accounted for 85 percent of all commercial hog slaughter.

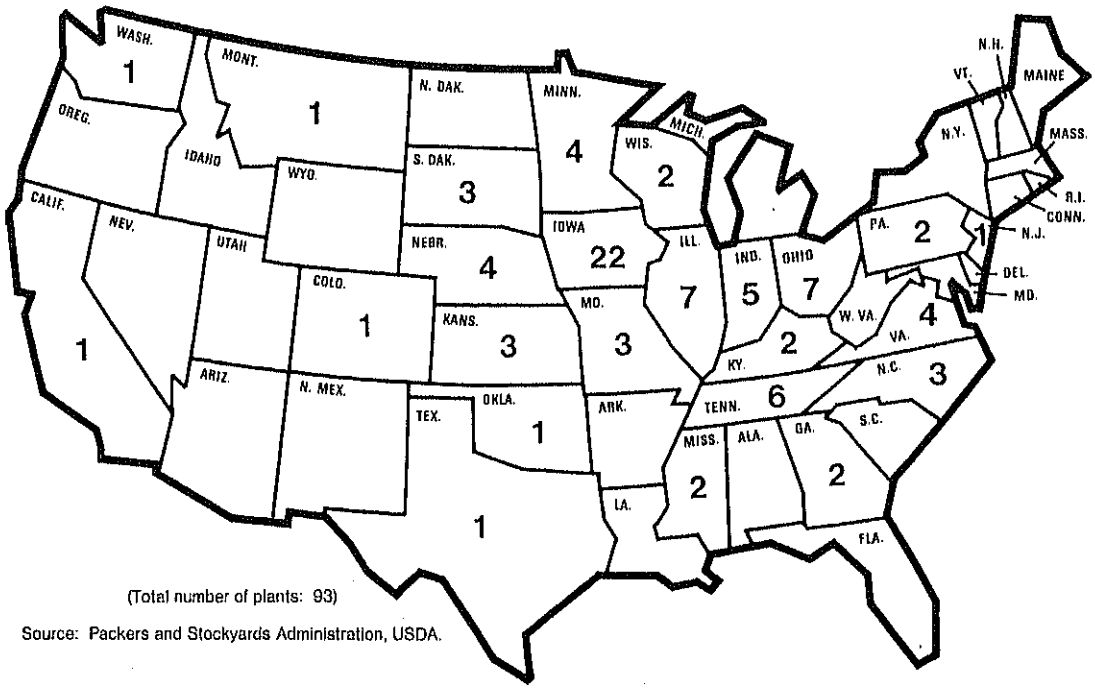
[8]Packers and Stockyards Administration, USDA, *Resume*, December 19, 1975.

Figure 8. Commercial hog slaughter, percentage by States, 1974.



Source: Gerald Engelman, P&SA-USDA, "Trends in Livestock Marketing Before and After the Consent Decree of 1920 and the Packers and Stockyards Act of 1921," statement to the Subcommittee on SBA-SBIC Legislation, House Small Business Committee, June 23, 1975, p. 15.

Figure 9. Plants slaughtering 250,000 or more hogs a year, 1974.



Source: Packers and Stockyards Administration, USDA.

Table 9.—Percentage of hog production and slaughter in six major States, 1946 and 1974

State	Percent	
	1946	1974
Hog production		
Iowa	19.0	21.6
Illinois	10.5	12.3
Indiana	8.0	7.6
Missouri	6.5	7.8
Minnesota	6.3	6.9
Ohio	6.1	[1]3.7
Total (6 States)	56.4	59.9
Commercial hog slaughter		
Iowa	12.0	24.3
Illinois	11.2	6.7
Minnesota	6.9	7.1
Ohio	5.8	4.7
Missouri	5.2	3.2
Pennsylvania	5.2	[2]3.5
Total (6 States)	46.3	49.5

[1]Nebraska replaced Ohio as rank #6 in 1974 with 5.6% of pig crop.
[2]Wisconsin moved into rank #5 with 4.3% of slaughter in 1974.
Source: USDA, *Livestock and Meat Statistics.*

Nationwide, since at least 1920, the concentration of purchases by the four leading firms has actually declined as major packers moved out of the central cities and many new firms were able to enter the industry. In 1920 the four largest firms purchased 44 percent of all slaughter hogs. By the early 1970's four firms purchased only 32 percent (table-10). The concentration of slaughter cattle purchases has declined faster, from 40 percent to 23 percent during the same period, as cattle slaughtering also moved to the country and new firms entered the industry.

These trends should have led to increased competition. However, the concentration of packer purchases is actually increasing at the local level where farmers sell their hogs to a few local buyers rather than trade at traditional terminal markets. In a single state or single area within a state there are very few packers bidding on the hogs of an individual producer. In the 12 North Central States, for example, where over two-thirds of hogs are slaughtered, four packers in each State kill 71 percent of all hogs.[9] Even this understates concentration at the local level because packers buy most of their hogs within a 100-mile radius of their plant. There are not many large efficient plants within 100 miles of most

[9]Gerald Engelman, "Trends in Livestock Marketing Before and After the Consent Decree of 1920 and the Packers and Stockyards Act of 1921," Statement before the subcommittee on SBA, SBIC Legislation, House Small Business Committee, June 23, 1975, p. 29.

Table 10.—Concentration of U.S. commercial livestock slaughter, purchases by the four largest packing firms, selected years 1920-73

Year	Percent		
	Cattle	Hogs	Sheep
1920	40.3	43.8	61.8
1930	48.5	37.5	68.1
1940	43.1	44.3	66.1
1950	36.4	40.9	63.6
1960	23.5	34.9	54.7
1970	21.3	31.5	53.1
1971	21.4	31.8	53.2
1972	22.3	31.6	54.7
1973	22.8	32.9	51.8

Source: Gerald Engelman, P&SA-USDA, "Trends in Livestock Marketing Before and After the Consent Decree of 1920 and the Packers and Stockyards Act of 1921." Statement to the Subcommittee on SBA-SBIC Legislation, House Business Committee, June 23, 1975, p. 8.

producers, except perhaps in Iowa. However, 22 plants in Iowa are owned by only 13 firms. In the 12-State region there are 60 major plants, slaughtering 250,000 or more hogs a year. These plants are controlled by 26 firms.

"This relative fewness of buyers (at the local level) means that the buying side of the live market has more market power than the selling side. A decision on the part of a single buyer to buy or not to buy may have an effect on price. A similar decision on the part of a single seller has no price effect at all. This means that the market for slaughter livestock is not fully competitive—that there are some tendencies toward monopolistic price-making already present in the system."[10]

In the years ahead concentration of buyers is expected to increase at both the local and national levels as small firms go out of business and many large firms merge to gain distribution efficiencies and market power to deal with large chain store accounts.

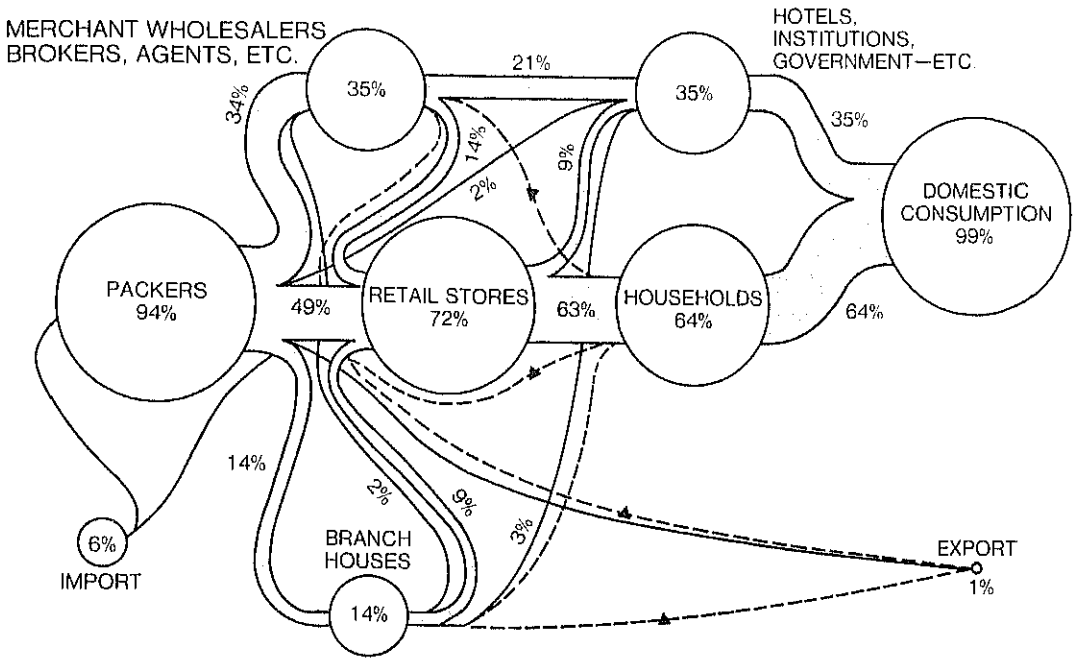
Pork Distribution

Pork is distributed from processors to consumers through retail stores and food service outlets. Food service includes hotels, restaurants, institutions, airlines, and similar places. In 1963, 35 percent of all red meats were distributed to consumers by food service outlets, and 63 percent by retail stores (figure 10). However, red meat distribution is dominated by beef which is primarily a fresh product whereas pork is largely a processed product. Pork is also relatively less common on food service menus than beef. An estimate made for 1969 shows 30 percent of beef and only 20 percent of pork was handled by food service firms.[11] Still another estimate for 1969 shows grocery stores (stores which do

[10] *Ibid.* pp. 29-30.

[11] Based on data from Michael G. Van Dress, *The Food Service Industry: Type, Quantity, and Value of Foods Used*, ERS-USDA, Stat. Bul. No. 476, November 1971; plus estimates for school lunch programs and military consumption.

Figure 10. Red meat distribution channels, 1963.



All figures expressed as a percentage of total volume based on value of meat.
▲ Less than .5 percent.

Source: National Commission of Food Marketing, *Organization and Competition in the Livestock Industry*, Technical Study No. 1, June, 1966, p. 43.

a major part of their business in dry groceries) sold 45 percent of fresh beef and 70 percent of fresh and cured pork products.[12] If 70 percent of pork is handled by grocery stores and 20 percent by food service, about 10 percent is sold by specialty meat markets and other users such as manufacturers of soups and TV dinners. Most of this residual 10 percent is served by households rather than food service.

The 1963 study gives additional information showing where grocery store and food service buyers obtain their supplies. Most grocery store buyers deal directly with packers; most food service buyers trade with independent wholesalers (fig. 10). Both types of buyers order pork according to their own specifications. The buyers generally look for service and quality and consistency of quality over time.

Grocery stores will undoubtably dominate the distribution scene. However, many new resources are likely to be devoted to developing food service channels for pork as Americans continue to spend more dollars for away-from-home meals.

As pork production moves more into confinement facilities, production will become less seasonal and may increase substantially. Increased efforts in product development, promotion, storage, and other areas will be needed to smooth out the seasonality of demand and to increase the total demand for pork. The entire hog-pork subsector should be interested in the new opportunities that could develop.

[12]Derived from *Supermarketing*, September 1970, p. 48; Lawrence A. Duewer, *Price Spreads for Beef and Pork*, ERS-USDA, Misc. Pub. No. 1174, p. 16.

Potential Roles for Cooperatives

Most swine production now takes place on general grain and livestock farms producing less than 500 market hogs per year (table 3). These farms are predominantly family farm units located in the Midwest. Several cooperatives have served these farms for about 50 years. General supply cooperatives have provided petroleum, fertilizer, seed, feed, hardware, and other farm and home supplies. Livestock marketing cooperatives have performed several services evolving from simple shipping associations to commission agencies at terminal markets to auction markets and a variety of country marketing programs. Cooperatives currently handle about 16 percent of all hogs marketed. Cooperatives only slaughter about 3 percent of all hogs marketed.

Future cooperative activities in the swine industry must be geared to the emerging structure of the industry. That is, family farm units each producing 1,500 to 15,000 head a year in confinement facilities, large and geographically dispersed processing plants located in the production areas, and closer coordination of production and processing activities.

There are two basic approaches that cooperatives may take in the future: (1) Independent and (2) integrated. The independent approach supports individual producer decisionmaking. Individuals make almost all of their own day-to-day production and marketing decisions and purchase available services from their cooperative as needed. Most cooperatives serving hog producers with farm supply, livestock marketing, and meat processing are now taking this approach. For the future they should add some new "production services" and "marketing services" or some new cooperatives may be formed to provide these services.

In the integrated approach producers transfer many production and marketing decisions to their cooperative. The cooperative follows a carefully designed program that synchronizes production and marketing activities of a large number of producers. The cooperative becomes a single entity capable of producing and merchandising pigs, hogs, or pork products of specified quality and quantity on a specified schedule. In return for decisionmaking freedom transferred to their cooperative, producers hope to receive increased net returns from a more efficient and more market-oriented system. The integrated approach will require a significant overhaul of existing cooperatives or the formation of new cooperatives to offer "integrated services."

Production Services

Management Assistance for Family Farm

As farmers turn from small diversified farms to large specialized hog farms, production risks increase. A small management mistake multiplied by several thousand market hogs will be costly, and if swine is the only enterprise, the survival of the farm is at stake. Producers could minimize the likelihood of mistakes by obtaining the counseling services of one or more specialists in such areas as procurement, production (genetics, nutrition, health), facilities development and use, business organization and estate planning, business management, personnel management, and marketing.

Land-grant universities will continue to provide generalized educational programs for groups of producers, but tomorrow's producer needs individualized counseling that meets the needs of his specific operation. The large scale of modern operations makes it not only necessary but also economically feasible to provide such service to individual farms. Some private breeding firms have developed a total management system that is

sold as part of a "package" with breeding stock. Producers are trained to use the system before the breeding animals arrive and then several followup visits are made to the farm. The fieldman checks not only technical production factors but also how well the producer is following the recommended program.

Cooperative entry into this field not only will provide more technical services, but also will give producers more control over the services provided. Cooperative (and other) farm suppliers have often given advice to producers anticipating sale of their products. Gold Kist Inc., a Southeast supply and processing cooperative, has formalized this assistance into a more comprehensive program called "Farm Hand." Such a service must be objective and not necessarily bound to any product lines offered for sale by the cooperative. Some producers might find it advantageous to form a specialized farm management service cooperative.

Whether the management service is by an independent cooperative or tied to a supply cooperative, technical advisors could be hired as needed to give advice to individual farmers. Some could even be hired part-time if necessary. When the service is provided by a supply outfit, the cost of the advisors could be included in the price of the products sold or billed as a separate fee. An independent cooperative would have to charge a consulting fee that could be paid on a fee-per-visit basis or on an annual subscription fee basis.

Credit

Large scale hog production using modern technologies requires large amounts of capital, much of which must be borrowed. Farmers may turn to local production credit associations and land bank associations or to livestock marketing cooperatives that offer credit. If none of these existing organizations provide satisfactory service, producers might form new specialized, livestock credit associations. In any case, producers will need a lender who understands confinement hog production and hog marketing and who can tailor repayment schedules to its cash flow irregularities.

Cooperatives could simplify the procedures for making loans by including credit as a part of their services to members. Several livestock marketing cooperatives, for example, offer credit. When livestock is sold, the cooperative may deduct the loan balance from the producer's payment. Farm supply cooperatives also extend credit by enabling producers to buy seed, fertilizer, feed, and other supplies on open account.

Inputs

General farm supply cooperatives can usually do a good job of providing large-scale swine producers with the type, quality, and volume of products needed. Many supply cooperatives currently offer petroleum, fertilizer, and seed for crop production, feed supplements and complete feeds, equipment and buildings. Some cooperatives, such as Land O'Lakes - Felco, and Farmland Industries are procuring feeder pigs for producer-members.

So far, supply efforts have been by general supply cooperatives which offer goods and services for all types of farm enterprises. In some concentrated hog production areas, however, a specialized supply cooperative or specialized division of a general cooperative may be developed to provide goods and services specifically for swine producers who themselves are becoming more specialized. Such a cooperative or division may be able to stay better informed about products and systems available, help develop new ones, and provide better technical assistance.

Breeding Stock

The need for a large number of gilts and boars by a single farm unit creates another cooperative opportunity. These animals must be of uniform high quality, efficient feed converters, disease free, and delivered on schedule.

The cooperative could serve as an order buyer, assembling uniform loads of stock that meet a producer's specifications. These hogs could be bought on a day-to-day basis or under contract. The cooperative might even produce its own breeding stock to achieve assurance of an adequate supply of hogs that meet its specifications. Land O'Lakes has begun a pilot project of producing its own breeding stock for sale to producers.[13] Farmland Industries has a program of contracting with local producers to supply breeding stock for its members.

If artificial insemination becomes more practical for swine producers, a cooperative could produce semen and provide insemination services as cooperatives have done for some time in the dairy subsector.

Cooperatives engaged in hog slaughtering and processing might find particular interest in developing breeding herds for the sale of stock animals or for artificial insemination. A cooperative meatpacker would have a unique opportunity to translate favorable carcass characteristics into the development of selected breeds. The cooperative would be in a position to coordinate a total production-processing-distribution system with the appropriate quantity and quality of hogs for maximizing producer returns.

Swine Testing

Emphasis on quality will require a continuous monitoring of the genetic base of each producer's swine herd. Boars and gilts will have to be carefully selected to improve herd quality for purposes of production efficiency and consumer preference. Some cooperatives, such as Farmland Industries, and some private packing firms, are operating testing stations, as are land-grant universities. Some universities, however, are under pressure to drop these types of service programs and turn them over to cooperatives and other commercial firms.

Swine testing is important for quality control and for evaluating research efforts. Testing would complement a cooperative breeding program. It would provide feedback about stock bought from private individuals or produced by the cooperative itself.

Confinement Technology

Services in the field of confinement technology range from general consulting to complete "turn-key" jobs. Some private firms are currently selling complete confinement systems to interested producers. The service includes building facilities, providing breeding stock in the pens, training management, and followup consultations. The highly technical nature of total confinement production requires the coordination of considerable expertise in a number of different disciplines.

A cooperative could offer similar services including site selection, building plans, materials, construction, breeding stock, and financing. Management training schools and a continuous management consulting service also could be developed to assure high performance levels. General supply cooperatives might consider developing complete confinement programs. The service could be offered to the family farm and to producers interested in farrowing cooperatives.

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[13]"Land O'Lakes Begins New Swine Breeding Project" *Land O'Lakes Mirror*, April 1975, pp. 6-7.

Management Assistance For Farrowing Cooperatives

The single most important factor determining the success of a farrowing cooperative is the manager. His technical skills, personnel and business management skills, dedication to the job, and attitude are critical in operating the unit. Producers investing in a farrowing cooperative tend to forget that weaning 8 to 10 pigs per litter is not automatic. It was not automatic on their individual farms and it is even less automatic in a large confinement unit where even a small error in preventative medicine, breed selection, nutrition, or waste removal can be multiplied over thousands of head of livestock.

Farrowing cooperatives need technical assistance on confinement systems as much as family units, although the type of service may vary. Farrowing cooperatives have hired managers often with less incentive for top performance than the owner-operator of a family farm operation. The managers are usually young and relatively inexperienced, not only in production practices but also in personnel and business management. Farrowing cooperatives often experience a high turnover of managers and low levels of production performance.

Members of several farrowing cooperatives should consider forming a management service cooperative to train managers and to supervise their work. It would also be possible for farrowing cooperatives to have a complete management contract with their management cooperative and the managers of individual farrowing cooperatives could be employees of the management cooperative.

Marketing Services

Forward Contracting

Large investments in specialized facilities, heavy debt levels, and widely fluctuating prices for corn and hogs, put the producer in a serious financial risk position. Many producers want to offset at least some risk by selling hogs and buying corn at fixed or guaranteed prices. Producers may do this directly by hedging in futures markets. However, most producers do not have access to competent hedging counsellors.

A cooperative could provide a valuable educational as well as brokerage service if sufficient demand for futures trading could be generated in a given area. The cooperative could employ skilled market analysts who could estimate production costs, calculate basis, watch the market continuously, advise producers when to place and lift hedges and execute the actual decisions on the appropriate exchanges. Several grain cooperatives and a few livestock marketing cooperatives already offer at least some of these services.

Many producers would rather not get involved with all the details of placing and removing hedges but would prefer to simply sign a contract for future delivery of hogs or purchases of corn at a fixed price. The cooperative making the contracts with producers would do the actual hedging, put up the margin money, and monitor day-to-day market activities. With the contracts on file, the cooperative also would be in position to schedule actual hog deliveries and merchandise hogs to packers.

Actually, the two above methods of forward pricing are complementary. In both cases, the cooperative must keep current on all market developments and have the capability of trading in futures markets. Hence, the cooperative could assist some producers in hedging with futures contracts while offering forward contracts to other producers.

Price Pooling

Producers could avoid many of the daily and seasonal ups-and-downs of the hog market by contracting with their cooperative to market their hogs on a pooled basis. The cooperative would assemble hogs as delivered by producers. Each producer would receive a partial payment when the hogs were delivered. The cooperative would merchandise the hogs to packers on a day-to-day or longer term basis. At the end of a given pool period, which may extend for a month or several months up to a year, the cooperative would make a final payment to producers. Each final payment would be based on the average price the cooperative received during the pool period for all hogs sold and adjusted for differences in weight and grade of each producer's hogs. Some seasonal adjustments could also be made. For example, proportionately greater returns could be made to producers who market hogs in the summer months when supplies are relatively short and prices are relatively high.

Price pooling could be used with a number of different selling methods, including private treaty negotiation, bid-acceptance, auction, and teleauction. In each case the cooperative would collect from buyers, and make appropriate payments to producers on a previously agreed upon basis.

Teleauction

Many producers probably would prefer to sell their hogs through a terminal or auction market where there is active competition among buyers for their hogs. The concept of competitive marketing generally has a good reputation for fair and honest pricing. These characteristics generally are missing in a marketing system largely consisting of privately negotiated transactions. Many existing terminal and auction markets are not good examples of competitive marketing because they are relatively small and attract few buyers. In addition, these terminals and auctions are not as efficient in handling livestock as many direct marketing methods. As a result, the net price to producers in many of these markets actually may be lower than in privately negotiated transactions.

A teleauction is a means of efficiently handling livestock and accomplishing a transaction while still determining price by the auction process. The auction is held over a conference telephone call (or teletype system). The auctioneer talks to all interested buyers simultaneously over the telephone. As in a regular auction, he calls out successively higher prices as long as buyers continue to bid. Each buyer simply announces his assigned code number when bidding. When the bidding stops, the hogs are pronounced sold to the highest bidder.

A teleauction is physically very different from a conventional auction. In the teleauction a single auctioneer can interact simultaneously with buyers scattered throughout the Corn Belt. The hogs may remain on farms until after they are sold. Producers with less than 75 hogs for sale at one time probably would have to deliver them to an assembly point for shipment to a packer, whereas producers with 75 or more hogs might be able to ship directly to a packer when combined with a similar size lot from another farm.

There are several variations in operating a teleauction. In all cases hogs must be graded and accurately described to the buyer. They may be commingled into lots of uniform weight and grade, which is preferable to most buyers, or sold as an unsorted load from a particular farm. They may be sold on a live basis or on the basis of carcass grade and weight. They may be sold for immediate delivery or for some specified future delivery. In other words, it is a very flexible method, depending on the needs of producers and the desires of their customers.

The teleauction has been very successful for selling feeder pigs and slaughter sheep and lambs. A related teletype system for hogs is operating successfully in several Canadian provinces. A teletype system has a higher installation cost than a teleauction because of the specialized equipment required, but the teletype gives a written record of each transaction and can handle transactions more rapidly than a conference telephone call. Therefore, the teletype is more efficient when there are a large number of buyers and a large volume of transactions.

Another type of marketing system using modern telecommunications would be the use of touchtone telephones to access a computerized market. Buyers and sellers from throughout the country could initiate bids and offers. The computer would match similar bids and offers after making appropriate transportation adjustments. In most transactions, hogs would go to a nearby packing plant, but if another area turned up short of hogs, prices in that area could rise and hog shipments would be shifted.[14]

Teleauctions and other electronic trading systems make it possible to have a centralized market with competitive pricing as well as efficient direct movement of hogs from farm to packer. Packers would find that procurement expenses could be reduced. The end result should be greater net returns to producers and packers.

Slaughter-Processing

Producers collectively may enter the slaughter and processing stages of the pork subsector in several ways. They may: (1) Contract with an existing packer to take the hogs on a custom basis, (2) form a cooperative that joint ventures (forms a partnership) with an existing packer under some sort of profit sharing plan, (3) lease an existing plant, (4) buy an existing plant, (5) build a new plant.

Producers may want to be involved in slaughter-processing for a number of reasons. It permits producers to retain ownership through additional stages and to reap some of the profits of those stages. It may maintain competition for hogs in a given area where major packers are closing their plants. Or it may achieve some efficiencies in slaughtering and processing that come from a closer coordination of the quantity and quality of hogs produced with the availability of slaughter capacity and consumer demand for pork.

It is possible for a cooperative to enter just the slaughtering stage by itself and sell whole chilled carcasses to a processor. The investment and operating costs per head in slaughtering are much lower than for processing, but the gross margins and net profitability per dollar invested are also lower. A simple "chill and kill" operation is also in a very vulnerable market position. It must move product quickly but has relatively few outlets willing to buy the product. By adding the processing function, a cooperative can offer a variety of products for a variety of markets. This gives flexibility in selling the product. Processing also involves much wider margins which give some internal flexibility in operating the plant. The net result is usually a greater return on investment from processing than slaughtering. Since it is difficult for a cooperative to be in processing without slaughtering, it is recommended that the two be considered as a single cooperative service.

Combinations

A single cooperative may provide more than one service. For example, Farmland Industries, Inc., is engaged in several activities in the swine industry. Through local member cooperatives, Farmland sells general farm supplies and arranges for the delivery of

[14]David L. Holder, *A Computerized Forward Contract Market for Slaughter Hogs*, AER No. 211, Michigan State University, East Lansing, Jan. 1972.

feeder pigs. Through its subsidiary, Farmland Foods, Inc., it operates slaughter-processing plants. Farmland encourages quality pork production by recommending breeding programs and production practices by contracting for the production and sales of high quality breeding stock, and by operating swine-testing stations. Farmland provides a large variety of complementary production and marketing services while permitting the producer to make all his normal production and marketing decisions.

Integrated Services

Integrated services centralize the production and marketing decisions of several producers to produce specified products for specified markets. Working through their elected board of directors, producers establish the standards and operating procedures that must be followed to maximize net benefits to the members.

When producers place their cooperative in the decisionmaking role, it is anticipated that the cooperative would be in a better position to effectively merchandise their products than if decisionmaking were dispersed. Three different merchandising systems are considered: Feeder pig, slaughter hog, and pork. The system selected by any group of producers will depend on the desires and the resources of those producers.

Feeder Pig Merchandising System

An effective feeder pig merchandising cooperative must have a system for matching the needs of pig finishers with the abilities of its pig producer members. Pig finishers want large lots of uniform, high-quality feeder pigs. These are the kinds of pigs that can be finished efficiently and meet consumer demand for lean pork. Pig producers must have quality breeding stock, adequate facilities, and financing; they must practice good nutrition and health care, and use good husbandry practices. They also must promote their product to sell it at reasonable prices. A feeder pig merchandising system integrates the production and marketing of pigs. This is currently being done by the Wisconsin Feeder Pig Marketing Cooperative, a specialized feeder pig marketing cooperative, and by a few general livestock marketing cooperatives such as MFA Livestock Association and Interstate Producers Livestock Association. Parts of their programs were used to design the following plan:

Production would occur on the farms of individual members according to production standards established by the cooperative's board of directors and manager. These standards would include: (1) The selection and approval of gilts and boars, (2) a health and sanitation program, (3) minimum housing and facilities, and (4) performance recordkeeping.

The cooperative would employ fieldmen to assist members in meeting the standards, and to provide counsel in solving various types of production problems. The fieldmen would also assist producers in selecting appropriate methods of handling and feeding their herds for maximum litter size, feed efficiency, and other performance goals.

In marketing the fieldmen would help producers determine the best time to sell and keep the cooperative's sales manager informed concerning the number and quality of pigs available for sale in any given week. The sales manager would contact buyers and make sales. The sales manager and the fieldmen would relate buyer demands for quality and quantity to their producer-members.

Most feeder pig cooperatives currently sell by teleauction. Teleauction permits a simultaneous sale of a large number of pigs assembled at several sites and enables several

buyers to bid without being physically present at any of the assembly sites. Buyers know the reputation of the cooperative for producing quality pigs that are carefully graded and weighed, and they know the pigs will perform well on their farms. Buyers recognize several advantages to an integrated production and marketing system, and they usually pay premium prices for the feeder pigs.

At the present time, it is necessary to assemble pigs prior to a sale to grade and commingle them into uniform lots. In the future, larger numbers of pigs may be produced by each cooperative member, and the pigs of each producer could be more uniform in size and quality. Then it might be possible to leave the pigs on the farms until after the sale has been completed. The cooperative fieldmen would grade the pigs on one of his regular visits and complete a consignment form. These forms would be sorted in the sales office to form uniform truckload lots and offered for sale over the teleauction. After the sale, the pigs could be collected directly from one or more farms and shipped directly to the buyer. Weighing could take place at the farm of the seller or on a truck specially equipped with electronic scales. Such a development would reduce handling, stress, exposure to disease, shrink and other cost factors.

In the future, feeder pig cooperatives may become involved in the actual production of replacement gilts and boars to gain more control over the genetic input of the pigs that may be needed to operate an efficient system and to satisfy the demands of buyers. Producers would obtain approved gilts and boars by purchasing them from the cooperative. Or the cooperative may place them on a member's farm on an open account as a means of financing a member's operation.

Another future development could be custom finishing so that feeder pig producers could retain title to their hogs through finishing. Finishing could be accomplished in a private custom feed yard or in facilities owned by the cooperative. In either case the producers' cooperative would assist members in coordinating feeder pig production with finishing. The cooperative also could collect and transmit performance information back to individual producers as a tool for choosing future breeding stock and adjusting feed and husbandry practices for efficient production of quality hogs. Even if the producers wish to sell most of their pigs, they may consider feeding at least some of them for performance information purposes. If a feeder pig cooperative gets involved in finishing, its program changes from one of pig merchandising to one of slaughter hog merchandising.

Slaughter Hog Merchandising System

Many cooperatives merchandise slaughter hogs to packers today, but their method of operation is to sell whatever producers offer, whenever they offer it. None of these cooperatives have established rigid quality specifications, husbandry practices, and other standards to generate hogs with the reputation that will bring premium dollars from processors. A cooperative hog merchandising system must be able to determine the types of hogs that packers want and what they are willing to pay. The cooperative should know what would happen to a packer's production costs if, for example, he could obtain a sufficient supply of hogs of very uniform weight, size, and grade. This information must then be communicated back to producers in an effective way to bring forth the desired quantity and quality of hogs.

The hog merchandising cooperative would be organized by producers that finish hogs. They may obtain pigs by farrowing on their own farms, from cooperative members that specialize in producing feeder pigs, from farrowing units owned by smaller groups of producers or by the cooperative. In all cases the finishing producers (through their coop-

erative) have control over the quality, quantity, and timing of feeder pig production in order to coordinate it with finishing capacity and the demands of processors.

Control over feeder pig production could be achieved by a cooperative that established standards and hired fieldmen in the way described earlier for feeder pig merchandising cooperatives. The feeder pig specifications would then be coordinated with specifications for feeding the pigs to slaughter weight on members' farms. Fieldmen would assist pig finishing producers in meeting the specifications and obtaining high levels of feeding performance. The fieldmen would also be used to coordinate sales.

There are two basic ways to arrange for ownership and risk-taking. In one, the producer owns everything and operates under contract specifications. In the other, the cooperative owns the hogs and feed and the producer supplies labor and facilities. For the future, it seems likely that feeder pig producers will own their herds directly, pay all production expenses, and produce pigs under contract specifications for the cooperatives. The pig finishers also will own the animals and pay all expenses.

Indiana Farm Bureau Cooperative Association (IFBCA) has been experimenting with some different methods of ownership and risk-bearing to examine the potential for cooperatives in a more integrated swine industry. IFBCA assumes most of the price risk by buying feeder pigs and placing them on the farms of qualified producers along with feed and medication. By furnishing pigs and supplies on an open account which is settled when the hogs are sold, the cooperative also provides financing. The producer provides labor and facilities. After the hogs are sold, the producer receives 3 to 10 percent of the gross, depending on feed conversion efficiency. Then the cooperative is paid for all inputs. The residual, if any, is placed in escrow for the producer. At the end of the 2-year contract period (6 lots of hogs), the producer receives all money held in escrow. If the escrow account has a negative balance, all debts are forgiven and absorbed by the cooperative through its general operating and reserve funds. This IFBCA program is being phased out because there were too many times when the cooperative could not buy enough high quality feeder pigs at a price which would allow a reasonable profit at the end of the feeding period.

In another approach IFBCA buys quality gilts and boars and places them on qualified producers' farms, along with feed and medication. IFBCA sells the feeder pigs, pays the feed bills, and pays the producer based on the number of pigs sold per gilt.

The pigs are sold at current market prices, adjusted for quality. Many of the pigs are actually sold to the same producer that farrowed them. The producers must pay for the pigs when they are delivered, and the producer purchases feed, medication and supplies on a regular 30-day account. Thus the cooperative assumes the price risk only in feeder pig production, but assumes no price risk in pig finishing. Yet the cooperative controls the quality of hogs being produced and can merchandise them to buyers.

A slaughter hog merchandising cooperative could sell by teleauction or by negotiated contract. Both have unique advantages. The teleauction gives assurance of competitive prices and maintains more flexibility for the cooperative because it is not bound to just a few buyers. Contractual sales, on the other hand, give the cooperative an opportunity to produce a unique product on a schedule that meets the needs of specific processors. In return for producing such a product, the cooperative should be able to negotiate a price premium to compensate producers adequately for the extra effort required. For example, some processors have found it advantageous to use 250 to 270 pound, No. 1 hogs, whereas other processors severely discount any hogs over 230 pounds. Many hogs being produced today would be overfat if fed beyond 230 to 240 pounds; however, there are strains that can be fed to the heavier weights and still produce a lean carcass. The lat-

ter type probably has a lower average per pound cost of production and processing. On the production side fewer pigs have to be farrowed to produce a given number of pounds of pork. On the processing side fewer head have to be slaughtered. Consequently, some packers are paying premiums for large lean hogs.[15]

In normal market channels heavy hogs are automatically discounted. Innovative producers with heavy, meat-type hogs, or hogs genetically capable of being the heavy, meat-type, are being unjustly penalized. A cooperative merchandising system should be able to respond to these conditions and bring benefits to producers and processors. The opportunity with heavy, meat-type hogs is only one of several innovations that probably could be made by an effective hog merchandising cooperative.

Pork Merchandising System

By the time pork reaches the wholesale level it is close to the form in which consumers buy it. For most items, such as bacon, sausage, picnics, and butts, the processor already provides the retailer with a consumer-ready package. Retailers cut loins into chops and split whole hams, but even these functions could be performed by the processor. The same firm could also prepare individual portion cuts in ready-to-cook or heat-and-serve form for the food service firms (restaurants, hotels, institutions, airlines).

What can be done by a producer cooperative that coordinates feeder pig production, finishing, processing, and wholesaling functions? Many advantages in coordinating production and finishing have already been discussed in the feeder pig and slaughter hog merchandising sections. As the cooperative brings processing and wholesaling under its direct control, production and finishing can be more closely coordinated with processing capacity and the demands of retailers and food service firms.

The cooperative would determine the types of pork products needed and the most efficient methods of producing and processing them. The cooperative would contract with its members to produce the quality, size, quantity, and flow of hogs needed. Some producers may specialize in feeder pig production and others in finishing. The cooperative may do some of its own farrowing or finishing depending on the desires of its producer members. In the above system the producers would own the hogs they were producing and would transfer them from one stage to the next by auction or administered prices.

Another method of organizing this system would be for the cooperative to own all the hogs, feed, and supplies and contract with producers to perform the various production activities. Gold Kist Inc., a cooperative in the Southeast, has initiated such a system. The cooperative owns the foundation herds that produce gilts and boars of specified quality. The gilts and boars are transferred to producers' farms where pigs are produced. Gold Kist provides feed, veterinary supplies, and field service and pays the producer on a per pig weaned basis with incentives forlarger numbers of pigs saved per litter. The pigs are transferred to other producers' farms and fed to slaughter weight. Gold Kist again provides feed, supplies, and service and pays producers on a per pound basis with incentives for greater feed conversion performance. According to a production schedule, the finished hogs are then shipped to the cooperative's processing plant and converted into pork products. These products are sold through local retailers under the cooperative's own brand name.

Gold Kist producers have given their cooperative complete control over the entire process of producing pork products. (The cooperative also assumes all price risks.) Gold Kist has the capability of fine-tuning its pork merchandising system to select the breeding,

[15]"Packer Offers Bonus for Heavy Meaty Hogs," *National Hog Farmer*, August 1975, pp. 8-11.

feeding, and production scheduling that will maximize returns to the entire system. As changes are detected in the market place, or new opportunities arise, or technological changes are made in production, processing, or distribution of pork, the cooperative could respond relatively quickly to make appropriate changes. If the cooperative makes good decisions, this fully integrated approach should result in an efficient use of resources that make maximum net returns to producers.

If, for example, product problems arise such as soft pork or off-flavor, they could be traced back through the system, even to the genetic pool if necessary, and corrections made. The end result should be a more reputable product and some increase in consumption. Both producers and consumers would benefit.

The cooperative should give much consideration to the food service trade. Food service generally requires top-quality, portion-controlled items with extra services built in. These extra services mean added margin and added profit opportunities for producers and processors. For example, menu items calling for stuffed pork chops, barbequed spareribs, or center cut ham slices could be prepared in "ready-to-cook" or "heat-and-serve" form. Loin eyes, or other roasts could be prepared for pork roast items.

The fast food trade is a special segment of the food service trade that is almost completely untouched by pork. For example, a flaked or cured pork item could be breaded for deep fried service. Several fast food restaurants are diversifying their product lines from hamburgers to fish and chicken and are beginning to consider pork. Another pork market that is relatively untouched is that of convenience foods, such as TV dinners and other heat-and-serve foods and snack foods. These "convenience foods" could become a new outlet for pork products in several different forms.

Conclusions

Pork producers should be asking two questions: (1) Where is the industry heading?; and (2) What are we going to do about it?

The direction of the industry is toward larger and fewer farms producing a gradually increasing total amount of pork. Hogs will be raised more and more in confinement facilities with somewhat less seasonal and cyclical variation. As farms increase in size, hogs will be shipped on a regular basis rather once or twice a year, and they will go directly from farm to packing plant. These trends are more or less "common sense" in light of current technology. They are expected to happen regardless of what producers or other groups decide to do with the industry.

Other developments do not appear to be as automatic. The following are anticipated to occur if packers continue to lead the industry. There will be fewer major packing plants in each region as obsolete plants cease to operate and larger, more efficient plants replace them. Hogs will be priced on the basis of wholesale cuts in a closed pricing system (not reported in public). Larger producers will be able to obtain somewhat higher prices than smaller producers. However, the fewness of buyers will result in less than competitive prices for all producers. Packers will be satisfied with the oligopoly structure and will attempt to perpetuate it.

Integration of production, marketing, processing, and distribution is not going to happen immediately, but it is expected eventually because of predictably greater overall efficiency and ability to produce a product of specified size and quality. Integration may come from a new group of investors outside the industry, from feed companies, or from producers.

The supersize hog factories producing 1 to 3 million head per year discussed in the early 1970's are still possible. One is still under development in North Carolina. The plan involves an outside investor entering the pork industry with a total system that produces hogs on corporate farms, and eventually will process hogs in its own plant and distribute pork to consumers.

Feed companies may attempt to integrate the industry to sell more feed as well as reap advantages of integration. The feed companies would probably use contract production with individual producers and contract processing with existing packers. Contracts would be used by the feed companies as a means of minimizing capital requirements.

Producers also may move directly into an integrated pork merchandising system as described above. But given the lack of detailed information concerning the feasibility of such a venture and the lack of real urgency for such a move, producers might "grow" into such a system. The immediate need that producers should sense is that of improving the pricing of live hogs. Producers are losing market power as the number of local buyers declines and markets become less competitive. To correct the situation producers should implement a cooperative open market pricing system such as a teletype auction. The teletype would generate accurate public prices and eliminate some of the market power held by local packers.

As the cooperative gained the confidence of its members to operate the market effectively, the cooperative could be given more control over production and marketing decisions and establish the hog merchandising system. As producers learn to commit themselves to their cooperative's hog merchandising system and as enough hogs are contracted (at least one million head per year), the cooperative could move into processing and operate a pork merchandising system.

Whether a cooperative takes the independent producer or integrated approach depends upon the needs and desires of producers forming and using the cooperative. In the long run, however, it is anticipated that a more integrated approach will prevail, because it will yield greater efficiencies in production and processing and greater quality control. These efficiencies will yield greater net benefits to producers, feed companies, packers, and consumers. The distribution of those benefits will depend on who centralizes the decisionmaking and thereby controls the production-processing-distribution system. The cooperative is the only form of organization that will put producers in control.

Other Publications Available

The Future Role of Cooperatives in the Red Meat Industry. Marketing Research Report 1089. April 1978. 99 pp.

Marketing Slaughter Cows and Calves in the Northeast. John T. Haas, Paul C. Wilkins, James B. Roof. FCS Research Report 36. 1977. 52 pp.

Contract Integrated, Cooperative Cattle Marketing System. Clement E. Ward. Marketing Research Report No. 1078. July 1977. 28 pp.

Cooperative Marketing Alternatives for Sheep and Lamp Producers. David L. Holder. Marketing Research Report No. 1081. August 1977. 40 pp.

Livestock Industry Trends: Implications for Cooperatives. G. Alvin Carpenter. FCS Information 92. 1973. 24 pp.

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